

XXII.—Materials for a Flora of the Malayan Peninsula.—By GEORGE KING, M. B., LL. D., F. R. S., F. L. S., Superintendent of the Royal Botanic Garden, Calcutta.

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As the Calcutta Herbarium contains a rich collection of Malayan plants, I propose to publish from time to time a systematic account of as many of them as are indigenous to British provinces, or to provinces under British influence. In addition to the states on the mainland of the Malayan Peninsula, these provinces include the islands of Singapore and Penang, and the Nicobar and Andaman groups. The classification which I propose to follow is that of the late Mr. Bentham and Sir Joseph Hooker. It is unlikely that, with the scanty leisure at my command, I shall be able, under several years, to complete even the meagre account of the Flora of which the first instalment is now submitted. The orders will be taken up nearly in the sequence followed in the *Genera Plantarum* of Bentham and Hooker, and in the Flora of British India of the latter distinguished botanist. The natural orders now submitted are *Ranunculaceæ*, *Dilleniaceæ*, *Magnoliaceæ*, *Menispermaceæ*, *Nymphaeaceæ*, *Capparidaceæ*, and *Violaceæ*. The order *Anonaceæ* should have come between *Magnoliaceæ* and *Menispermaceæ*; but, on account of its extent and difficulty, I have been obliged to postpone its elaboration pending the receipt of further herbarium material. It will however, it is hoped, soon be taken up.

ORDER I. RANUNCULACEÆ.

Annual or perennial herbs or shrubs. *Leaves* alternate or opposite. *Stipules* 0, or adnate to the petiole, rarely free. *Flowers* regular or irregular, 1-2-sexual. *Sepals* 5 or more, rarely 2 to 4, usually deciduous, often petaloid, imbricate or valvate. *Petals* 0 or 4 or more, hypogynous, imbricate, often minute or deformed. *Stamens* hypogynous; anthers usually adnate and dehiscing laterally. *Carpels* usually many, free, 1-celled; stigma simple; ovule one or more, on the ventral suture, anatropous, erect with a ventral, or pendulous with a dorsal raphe. *Fruit* of numerous 1-seeded achenes, or many-seeded follicles, rarely a berry. *Seed* small, albumen copious; embryo minute. *Distrib.* Abundant in temperate and cold regions: genera 30; known species about 310.*

* The above diagnosis of this order (copied from Sir Joseph Hooker's Flora of British India) covers the entire order, which is usually sub-divided into five sub-orders or tribes. Representatives of only one of these tribes (*Clematidæ*) have hitherto been discovered in the region under review. But, as exploration of the central mountain ranges proceeds, plants belonging to one or two of the other tribes

Tribo I. *Clematideæ*. Climbing shrubs. *Leaves* opposite. *Sepals* valvate, petaloid. *Carpels* 1-ovuled; ovule pendulous. Fruit of many achenes.

Petals 0	...	...	...	... 1. <i>Clematis</i> .
Petals many, linear	...	...	...	... 2. <i>Naravelia</i> .

1. CLEMATIS, Linn.

Woody climbers. *Leaves* opposite, simple or compound, exstipulate. *Sepals* 4 to 8, valvate. *Petals* 0. *Stamens* many. *Carpels* many, with long tails. *Ovule* solitary, pendulous.—Distrib. Temperate climates; species about 100.

1. *C. SIMILACIFOLIA*, Wall. in *Asiat. Research.* xiii, 414. *Leaves* simple, (rarely pinnate) ovate, blunt, with broad sub-cordate bases, boldly 5-nerved, coriaceous, glabrous, entire or remotely serrate, 3 to 10 in. long by 1.5 to 5 in. broad; petioles nearly as long. *Panicles* axillary, few-flowered, 6 to 12 in. long. *Flowers* 1 to 1.5 in diam. *Sepals* 4 to 5, coriaceous, oblong, reflexed, outside dull brown tomentose, inside purple. *Filaments* linear, glabrous, the inner shorter with longer anthers. *Achenes* flat, pubescent, with broad margins and long feathery tails. A tall glabrous woody climber. DC. *Prod.*, I, 10; *Bot. Mag.*, t. 4259; H. f. et Th. *Fl. Ind.*, i, 6; Hook. fil. *Fl. Br. Ind.*, i, 3. *Miq. Fl. Ind.*, *Bat.* I, Pt. ii, p. 2. *C. sub-peltata*, Wall., *Pl. As.*, *Rar.* I, t. 20. *C. Munroana*, Wight *Ill.*, i, 5, t. 1. ? *C. glandulosa*, Bl., *Bijdr.* i, 1.

Penang, Curtis; but probably occurring also in the Central Range of mountains in the Malayan Peninsula.

2. *C. GOURIANA*, Roxb. *Fl. Ind.* ii, 670. An extensive climber, the young parts pubescent, adult glabrous. *Leaves* shortly petiolate, pinnate, 2-pinnate or 2-ternate, the leaflets shortly petiolulate, membranous, ovate to ovate-lanceolate, 5-nerved, sometimes sub-cordate, entire or irregularly dentato-serrate, 2 to 3 in. long by .75 to 1.75 in. broad. *Panicles* many-flowered, longer than the leaves; flowers small (.3 to .5 in. in diam.) greenish-white. *Achenes* narrowly oblong, pubescent, emarginate, with long silky tails. DC. *Prod.* i, 3; W. A. *Prod.* 2; Wight *Ic.* 933-4. H. f. et Th. *Fl. Ind.* 8; Hook. *Fl. fil. Brit. Ind.* i, 4. *Miq. Ind. Fl. Bat. Vol.* I, Pt. 2, p. 4. *C. cana* and *dentosa*, Wall. *Cat.* *C. javana*, DC. *Prod.* i, 7.

Not uncommon at low elevations in the Indo-Malayan region.

2. NARAVELIA, DC.

Climbing shrubs. *Leaves* 3-foliolate, terminal leaflet generally transformed into a tendril. *Sepals* 4 to 5. *Petals* 6 to 12, narrow, longer

may be found. I therefore think it better to let the diagnosis stand, than to modify it so as to include only the tribe *Clematideæ*.

than the calyx. *Achenes* long stipitate, with long-bearded style.—Distrib. Two E. Asiatic species.

N. LAURIFOLIA, Wall. Cat. Young parts puberulous, adult glabrous. *Leaflets* broadly ovate, shortly acuminate, entire, boldly 5-nerved, 4 to 6 in. long by 2.5 to 3 in. broad. *Panicles* longer than the leaves, many-flowered; *petals* long, linear, whitish green. *Achenes* cylindric, glabrous, with stout sericeous tails. Hook. fil. et Th. Fl. Ind. i, 3.; Hook. fil. Fl. B. Ind. i, 7; Miq. Fl. Ind. Bat. I, pt. ii, 2. N. *Finlaysoniana*, Wall. Cat. 468 (with diseased fruit). *Clematis similacina*, Bl. Bijdr. I, 1.

Common throughout the whole Indo-Malayan region to the Philippines.

ORDER II. DILLENiaceÆ.

Trees, shrubs or herbs, sometimes climbing. *Leaves* alternate, simple, entire or toothed (pinnatifid in *Acrotrema*), exstipulate with sheathing petioles, or more rarely with lateral deciduous stipules. *Flowers* yellow or white, often showy. *Sepals* 5, imbricate, persistent. *Petals* 5 (rarely 3 or 4) deciduous. *Stamens* many, hypogynous, many-seriate; anthers innate, with lateral slits or terminal pores. *Carpels* 1 or more, free or cohering in the axis; styles always distinct; ovules amphitropous, solitary or few and ascending, or many and attached to the ventral suture. *Fruit* of follicles, or indehiscent and sub-baccate. *Seeds* solitary or many, arillate, testa crustaceous, raphe short, albumen fleshy; embryo minute, next the hilum.—Distrib. Chiefly tropical; species about 210.

Tribe I. *Delimææ*. Filaments thickened upwards; anthers short, cells remote oblique.

Carpel solitary 1. *Delima*.

Carpels 2-5 2. *Tetracera*.

Tribe II. *Dilleniææ*. Filaments not thickened upwards; anthers with parallel cells.

Carpels 3; stemless herbs, leaves all radical, large... 3. *Acrotrema*.

Carpels 5-20; seeds arillate 4. *Wormia*.

Carpels 5-20; seeds not arillate 5. *Dillenia*.

1. DELIMA, Linn.

Woody climbers. *Leaves* parallel-veined. *Flowers* many, in terminal panicles, hermaphrodite, white. *Sepals* 5. *Petals* 2 to 5. *Stamens* many; filaments dilated upwards; cells much diverging. *Ovary* solitary, subglobose, narrowed into a subulate style; ovules 2 to 3, ascending. *Follicles* ovoid, coriaceous, 1-seeded. *Seed* with a cupular toothed aril.

1. *D. SARMENTOSA*, Linn. *Leaves* 3 to 5 in., obovate, ovate or broadly lanceolate, obtuse or acute, quite entire, serrate or crenate, appressed pilose; both surfaces scabrid; nerves 9 to 11 pairs, straight, ascending, prominent: length 2·5 to 3·5 in., breadth 1 to 2 in., petiole ¼ to ½ in. *Flowers* ¼ to ½ in. in diam., in tomentose or pilose spreading panicles that are often leafy. *Sepals* reflexed. DC. Prod. i. 69; Wall. Cat. 6632; Bot. Mag. t. 3058. Miq. Fl. Ind. Bat. I, pt. ii, 7; Hook. Fl. Fl. B. Ind. I, 31. *D. intermedia*, Bl. Bijdr. *Tetracera sarmentosa*, Willd.; Roxb. Fl. Ind. ii. 645. *Leontoglossum scabrum*, Hance in Walp. Ann. iii. 812.

Var. 1. *GLABRA*; fruit glabrous.

Var. 2. *HEBECARPA*; fruit hairy. *D. hebecarpa*, DC. Prod. i, 70; Deless. Ic. Sel. t. 72; Wall. Cat. 6633. *D. intermedia*, Blume. *Davilla hirsuta*, Teysm. et Binn. *Delimopsis hirta*, Miq.

2. *D. LEVIS*, Maingay MSS. *Leaves* oblong-lanceolate to narrowly elliptic, acute, entire, the base cuneate or rounded; nerves 8 to 9 pairs, ascending, prominent; upper surface smooth, shining; the lower puberulous; neither of them scabrid; length 5 to 7·5 in., breadth 2 to 3·5 in., petiole ⅞ in., broad. *Flowers* ⅝ in. in diam., in narrow tomentose leafless panicles longer than the leaves. *Sepals* reflexed.

Malacca, Maingay No. 10. Collected only by the late Dr. Maingay.

2. TETRACERA, Linn.

Climbing shrubs or trees, smooth, scabrid, or pubescent. *Leaves* with parallel lateral veins. *Flowers* in terminal or lateral panicles, hermaphrodite or partially 1-sexual. *Sepals* 4 to 6, spreading. *Petals* 4 to 6. *Stamens* many, filaments dilated upwards, anther-cells distant. *Carpels* 3 to 5; ovules many, 2-seriate. *Follicles* coriaceous, shining. *Seeds* 1 to 5, with a fimbriated or toothed aril.—Distrib. All tropical; species about 25.

1. *T. ASSA*. DC. Prod. i. 68. Young branches striate, pubescent or sub-strigose. *Leaves* 2 to 5 in. long, ovate-lanceolate, acuminate, obscurely sinuate or serrate, glabrous except the nerves beneath. *Panicles* axillary and terminal, shorter than the leaves, few-flowered. *Follicles* several-seeded. W. and A. Prod. 5; Hassk. Pl. Rar. Jav. 177. Hook. fl. and Th. Fl. Ind. i, 63; Hook, fl. Fl. B. Ind. I. 31; Miq. Fl. Ind. Bat. I, Pt. ii. 8.

Common throughout Indo-Malaya, at low elevations.

2. *T. EURYANDRA*, Vahl. Symb. iii, 71. Young branches tomentose. *Leaves* rigid, 3 to 4 in. long, oblong or obovate-oblong, entire or obscurely sinuate, above glabrous except the midrib, below minutely tomentose when young. *Panicles* terminal and axillary, shorter than the leaves,

few-flowered. *Follicles* several-seeded. DC. Prod. I, 68; Roxb. Fl. Ind. ii, 646; H. f. et Th. Fl. Ind. i, 63; Hook. fil. Fl. Br. Ind. I, 32; Miq. Fl. Ind. Bat. Vol. I, pt. ii, 8. *T. lucida*, Wall. Cat.

Straits Settlements, at low elevations. Distrib. Moluccas and New Caledonia.

3. *T. MACROPHYLLA*, Wall. Cat. 6628. Young branches pubescent. *Leaves* broadly elliptic to obovate-elliptic, 5 to 7 in. long, margin sub-sinuate, scabrid on both surfaces. *Panicle* terminal, longer than the leaves, many-flowered. *Sepals* rotund, not ribbed. *Follicles* 1-seeded. Hook. fil. et. Th. Fl. Ind. I, 63; Hook. fil. Fl. Br. Ind. I, 32; Miq. Fl. Ind. Bat. Vol. I, pt. ii, 8.

Straits Settlements, in tropical forests. Distrib. Sumatra.

4. *T. GRANDIS*, King, n. sp. A large tree. Young branches and inflorescence shortly velvety-tomentose. *Leaves* large, coriaceous, broadly elliptic, rarely slightly obovate, the apex truncate and minutely apiculate; the edges obscurely crenate or undulate toward the apex, entire below, recurved when dry; the base rounded or slightly narrowed: upper surface scabrous, lower minutely tomentose: nerves stout, 14 pairs, straight, erecto-patent; length of blade 8 to 10 in., width 5 to 5 in., petiole about 5 in., stout. *Inflorescence* in little-branched, lateral or terminal panicles a foot or more long. *Flowers* shortly pedunculate. *Sepals* 5, broadly ovate, sub-acute, concavo, ribbed and tomentose externally, 5 in. long. *Petals* about as long as the sepals but narrower, glabrous. *Anthers* truncate, narrowed to the long slender filaments. *Follicles* with a slender curved beak.

Perak. Scortechini, No. 90b.

Said by Father Scortechini to be a very large tree.

3. ACROTREMA, Jack.

Perennial stemless herbs with woody rhizomes. *Leaves* large, parallel-nerved, with sheathing deciduous stipules. *Scape* short axillary, bracteolate. *Flowers* large, yellow. *Sepals* 5. *Petals* 5. *Stamens* numerous, in 3 bundles which alternate with the carpels; filaments filiform, anthers erect, with longitudinal porous dehiscence. *Carpels* 3, slightly cohering: styles subulate, recurved; ovules 2 or more. *Fruit* of 3 irregularly dehiscent follicles. *Seed* with a membranous aril; the testa crustaceous, pitted.—Distrib. ten species, of which 8 are endemic in Ceylon, 1 Peninsular-Indian, and 1 Indo-Malayan.

A. COSTATUM, Jack in Mal. Misc. ex. Hook. Misc. ii, 82. Whole plant covered with stiff rufous or golden hairs, especially when young. *Leaves* obovate, the margins dentate-ciliate; the base narrowed, sagittate; upper surface strigose, often blotched with white, petiole short. *Racemes*

shorter than the leaves, 8 to 10-flowered, setose; bractcoles minute, lanceolate. *Flowers* an inch in diam. *Stamens* about 15. Hook. fil. and Th. Fl. Ind. i, 65; Hook. fil. Fl. Br. Ind. I, 32; Miq. Fl. Ind. Bat. Vol. I, Pt. ii, 10. *A. Wightianum*, W. and A. Prod. 6: Wight Ill. t. 9.

Straits Settlements; in damp shady spots at elevations of 500 to 2500 feet. Common.

4. WORMIA, Rottb.

Trees, sometimes lofty; or shrubs. *Leaves* broad, sub-coriaceous; lateral nerves many, strong, parallel; petioles usually with deciduous stipular wings. *Flowers* large, in terminal racemes or panicles. *Sepals* 5. *Petals* 5. *Stamens* indefinite, in several series, nearly free; anthers linear, erect, cells opening by 2 pores. *Carpels* 5 to 10, scarcely cohering in the axis; ovules numerous. *Fruit* of indehiscent or follicular 3- or more-seeded carpels. *Seeds* with a fleshy aril. Distrib. Tropical Asia and Australia, and one in Madagascar; species about 9.

Sect. I. *Capellia*, Blume (genus). Inner row of stamens much longer than the outer and arching over them.

1. *W. SUFFRUTICOSA*, Griff. Notul. iv. 706; Ic. iv. t. 649, f. 1. A small tree. Young parts floccose. *Leaves* with short, broadly winged, petioles; broadly elliptic or sub-obovate-elliptic, blunt or acute, deutate, glabrous except the 12-20 pairs of nerves which are sparsely pilose beneath; length of blade 7 to 9 in.; breadth 4 to 5.5 in.: petiole .5 to 1.5 in. *Racemes* about as long as the leaves, leaf-opposed; pedicels .5 to 1 in. long. *Flowers* 3 to 4 in. in diam., yellow. *Sepals* broadly ovate, nerved, glabrous. *Petals* obovate, crenulate. *Carpels* 5 to 7, 3 to 5-seeded. Hook. fil. Fl. Br. Ind. I, 35. *W. excelsa*, H. f. and Th. Fl. Ind. I, 67 (not of Jack). *W. subsessilis*, Miq. Fl. Ind. Bat. Suppl. i. 618; Ann. Mus. Lugd. Bat. i. 315, t. 9.

Malacca, Singapore; extends to Sumatra, Bauka, Borneo and probably to other islands of the Archipelago.

2. *W. OBLONGA*, Wall. A tree. Young branchlets thin, sparsely tomentose, the old glabrous. *Leaves* rather distant, on moderate channelled (not winged) petioles, oblong to elliptic, acute at base and apex, entire or distantly serrate or sub-serrate, nerves 9 to 12 pairs: length of blade 6 to 8 in., breadth 3 to 3.5 in.; petiole 1.5 in. *Cymes* terminal or leaf opposed, few-flowered, shorter than the leaves, tomentose; pedicels about 1 in., thickened above, tomentose. *Flowers* 3 to 5 in. in diam. *Sepals* ovate-rotund, tomentose externally. *Petals* obovate, entire, veined, yellow. *Carpels* 8 to 10. H. f. & Th. Fl. Ind. i, 67; Hook. fil. Fl. Br. Ind. i, 35; Miq. Fl. Ind. Bat. Vol. 1, pt. ii, p. 11.

Straits Settlements in more or less dense forest. Distrib. Sumatra

Sect. II. *Eucormia*. Filaments all erect and nearly equal in length.

3. *W. PULCHELLA*, Jack. Mal. Misc. ex. Hook. Comp. Bot. Mag. I, 221. A shrub. Young parts glabrous. *Leaves* on short narrowly winged petioles, obovate or obovate-oblong, obtuse, entire, truncate or retuse, sometimes mucronate, thickly coriaceous, glabrous; nerves 5 to 7 pairs; length of blade 2.5 to 4 in., breadth 1.5 to 2.5 in.; petiole .75 in. *Flowers* solitary or in small cymes, axillary or terminal, 2 in. in diam.; pedicels 2 in. long. *Sepals* broadly ovate, glabrous. *Petals* ovate. *Carpels* about 5. *Seeds* few, with pulpy arillus. H. f. and Th. Fl. Ind. I, 68: Hook. fil. Fl. Br. Ind. I, 36; Miq. Fl. Ind. Bat. Vol. I, Pt. ii, p. 11.

Perak and Malacca; at elevations under 1,000 ft. Distrib. Sumatra.

4. *W. MELIOSMÆFOLIA*, King, n. sp. A small tree, the young parts and leaf-petioles softly fulvous-tomentose. *Leaves* crowded near the apices of the branches, coriaceous, obovate-lanceolate to obovate-elliptic, acute or acuminate, entire or minutely and remotely serrate, base acute, glabrous above except the 14 to 18 pairs of spreading pubescent nerves, under surface minutely tomentose; length of blade 5 to 8 in., breadth 3 to 4 in., petiole about 1 in. *Flowers* about 3 in. in diam., axillary, solitary, on slender tomentose peduncles 2 in. long, or in few-flowered linear-bracteolate cymes; peduncles 1 in. long. *Sepals* ovate-oblong, velvety-tomentose externally, glabrous internally. *Petals* oblanceolate, pale yellow, veined, wavy. *Stigmas* about 12, linear, recurved. *Follicles* with several compressed, arillate seeds. *Dillenia meliosmaefolia*, Hook. fil. & Th. Fl. Br. Ind. I, 36.

Malacca, Perak.

Originally described as a *Dillenia* by Sir Joseph Hooker who had not seen the fruit.

5. *W. SCORTECHINII*, King, n. sp. A tree 60 to 70 feet. Branchlets thick, scarred, puberulous or glabrous. *Leaves* coriaceous, obovate-oblong, shortly acuminate, undulate-crenate, narrowed to the petiole: upper surface shining, glabrous except the midrib and nerves which are minutely pubescent as is the under surface: nerves prominent on the under surface, 26-30 pairs each ending on the margin of the leaf in a tuft of hairs; length of blade 4 to 6.5 in., breadth 2 to 3; petiole .5 to 2 in., winged and expanded at the base. *Cymes* supra-axillary, sub-terminal, dichotomous, pubescent; bracteoles oblong, .3 in. long; pedicels .25 in. long. *Flowers* when expanded about 1 in. broad. *Sepals* 5, puberulous externally, broadly ovate, coriaceous. *Petals* 0. *Anthers* equal in length to the filaments, slightly hairy. *Ovaries* 3 to 5, usually 4. *Ripe fruit* unknown.

Perak. Father Scortechini.

Collected only by Scortechini who left a MS. description of it under the name *Wormia apetalata*. But, as that name is pre-occupied by a species of Gaudichaud, I have rechristened it after its lamented discoverer. In his description Father Scortechini says that, although he opened many buds, he never could find any trace of petals. In stamens this agrees with the *Euwormia* section of *Wormia*: but whether it is really a *Wormia* and not a *Dillenia* cannot be settled until ripe fruit is found.

Species of which flowers are unknown.

6. W. KUNSTLERI, King, n. sp. Young branches thick, rugose pubescent. *Leaves* on channelled petioles, obovate-oblong, blunt, the base narrowed, slightly sinuate-crenate, glabrous except the pubescent midrib and 18 to 22 pairs of nerves: length of blade 6 to 8 in., breadth 3.5 to 4 in.; petiole nearly 2 in. *Cymes* leaf-opposed, few-flowered, tomentose; peduncles about 1 in. *Sepals* broadly ovate, glabrous, thick. Young seeds arillate.

Perak. King's collector No. 5905. The only specimens have unripe fruit.

5. DILLENIA, Linn.

Characters of *Wormia* except that the flowers are more often solitary and are sometimes white; the carpels are rather more numerous, are never dehiscent, cohere in the axis, and are enveloped in the thickened accrescent calyx; while the seeds are exarillate.

1. D. INDICA, Linn. A tree: the young branches tomentose. *Leaves* crowded at the ends of the branches, coriaceous, lanceolate or ovate-lanceolate, sharply serrate, glabrous above, pubescent beneath especially on the 30 to 40 pairs of stout nerves: length of blade 8 to 12 in., breadth 3 to 4 in., petiole 1 to 1.5 in., channelled, sheathing at the base. *Flowers* 6 to 9 in. in diam., solitary, axillary, on short tomentose pedicels 2 to 3 in. long. *Sepals* orbicular, concave, fleshy. *Petals* white, obovate-oblong, undulate. Inner *stamens* longer than the outer and arching over them. *Pistils* about 20; the stigmas lanceolate, recurved, radiating. *Carpels* 1-celled with many reniform hairy seeds. Ham. Linn. Trans. XV, 99; H. f. and Th. Fl. Ind. I, 69, Hook fil. Fl. Br. Ind I, 36; Martelli in Malesia III, 154. *D. speciosa*, Thunbg, Linn. Trans. i, 200; DC. Prod. i, 76; Roxb. Fl. Ind. ii, 651.; W. & A. Prod. 5; Wight Ic. 823; Miq. Fl. Ind. Bat. Vol. I, Pt. ii, 11. *D. elliptica*, Thunbg. Linn. Trans. I, 200.

Tropical Forests of the Indo-Malayan Region. Distrib. India, Ceylon.

2. D. OVATA, Wall. A tree, the branchlets as thick as a quill, softly tomentose. *Leaves* coriaceous, ovate or obovate-rotund, apex sub-

acute, rounded or emarginate; minutely denticulate or sub-entire; glabrous above except the 16 to 20 pairs of sub-horizontal pubescent nerves, fuscous-tomentose beneath; blade 3.5 to 7 in. long by 2.75 to 3.5 in. broad, petiole about 1 in. tomentose. *Flowers* solitary 6 to 8 in. in diam.; peduncles stout, tomentose, 2.5 in. long. *Sepals* reflexed, ovate, concave, thick, minutely adpressed-tomentose in the middle externally, the margins and inner surface glabrous. *Petals* obovate, yellow, veined. *Stigmas* about 15, long, linear, recurved. H. f. and Th. Fl. Ind. I, 70; Hook. fil. Fl. Br. Ind. I, 36; Miq. Fl. Ind. Bat. Vol. I, Pt. ii, 12.

Penang and Perak. In tropical forests.

I have seen no ripe fruit of this, nor have I found any description of the ripe fruit. I am therefore unable to say whether the sepals and seeds are those of a *Dillenia* or a *Wornia*. This comes near *D. aurea*, but the panicles are much laxer and the petioles longer.

3. *D. AUREA*, Sm. Ex. Bot. 93, t. 92. A tree, the branchlets as thick as the little finger, glabrous, scabrid; young parts rufous-sericeous. *Leaves* obovate, blunt or acute, crenate-dentate, glabrous above except the 20 pairs of pubescent, bold, sub-transverse nerves; under surface softly puberulous; length of blade 5 to 8 in.: breadth 3 to 4.5 in.: petiole 1.25 to 2 in., sheathing at the base. *Flowers* solitary, from shortened branches, 4 to 5 in. diam.; peduncles stout, 1 in. or more. *Sepals* oblong, obtuse, concave, fleshy, adpressed-pubescent externally when young, when old glaucous. *Petals* obovate, yellow, veined. *Stigmas* about 10, linear, radiate. DC. Prodr. i. 76; Wall. Cat. 6624; H. f. & T. Fl. Ind. 70. Hook. fil. Fl. Br. Ind. I, 37; Miq. Fl. Ind. Bat. Vol. I, pt. ii, 12; Martelli in Malesia III, 155. *D. ornata*, Wall. Pl. As. Rav. i, 21, t. 23; Cat. 947. *D. speciosa*, Griff. Notul. iv, 703. *Colbertia obovata*, Bl. Bigdr. 6.

Throughout the Indo-Malayan region, at low elevations.

4. *D. RETICULATA*, King, n. sp. A large tree. *Leaves* very coriaceous, obovate-elliptic, obtuse?, dentate; the base truncate, cordate; upper surface glabrous except the impressed midrib and nerves, which are pubescent; under surface pubescent, the midrib and nerves very strong; reticulations minute, very bold, areolar; nerves 32 to 36 pairs, sub-horizontal; length of blade 10 to 18 in., breadth 7 to 12 in., petiole 2 to 3 in. winged, much expanded at the base. *Cymes* lateral and terminal, short, branching, 10 to 12 flowered, pubescent; pedicels stout, bracteolate. *Sepals* thick, broadly elliptic to orbicular, 1 in. in diam., pubescent externally. *Petals* oblong, concave, 1.5 in. long. *Stamens* in many series; the outer inflexed, introrse; the inner erect and extrorse. *Pistils* about 9, puberulous; stigmas linear, radiating, ovules ox-arillate.

Perak. Father Scortechini.

Ripe fruit is unknown and it is possible that the seeds may be arillate. It has, however, the facies of a *Dillenia* rather than of a *Wormia*. In leaf this resembles *D. eximia*, Miq., but that plant has broader leaves much more narrowed to the base. It also resembles *D. grandifolia*, Wall., but is distinguished by its closer nerves and remarkable areolar reticulations.

Species imperfectly known.

5. *D. GRANDIFOLIA*, Wall. *Leaves* oblong-lanceolate, acute, serrate, softly hairy above, tomentose beneath; nerves about 40 to 50 pairs, transverse: length of blade 2½ in., breadth 9 in.; petioles stout, 5 to 6 in. long, densely tomentose as is the midrib. H. f. & Th. Fl. Ind. I, 71; Hook. fil. Fl. Br. Ind. I, 38. Miq. Fl. Ind. Bat. Vol. I, pt. ii, 12.

Penang and Malacca.

Known only by a few imperfect specimens in Herb. Wallich. *D. eximia*, Miq., from Sumatra, is a species also known only by a few leaf specimens which I have examined. The two differ as above described and may belong to *Wormia*.

ORDER III. MAGNOLIACEÆ.

Trees or shrubs, sometimes climbing, often aromatic, wood-tissue with glandular markings. *Leaves* alternate, quite entire or toothed, stipulate or not. *Flowers* axillary and terminal, often showy, white, yellow or red, sometimes unisexual. *Sepals* and petals very deciduous, hypogynous, arranged in whorls of 3. *Stamens* indefinite, hypogynous, filaments flattened or terete, free or monadelphous; anthers basifixed, adnate cells bursting longitudinally. *Carpels* indefinite, free or partly cohering in one whorl, or in several on an elongate axis; styles short or rarely long, stigmatose on the inner surface; ovules 2 or more, on the ventral suture, anatropous or amphitropous. *Fruit* baccate, or foliiculate, or of woody dehiscent carpels, which are sometimes arranged in a cone. *Seeds* solitary or few, sometimes pendulous from a long funicle, testa single and crustaceous, or double, the outer fleshy; albumen granular or fleshy and oily; embryo minute, cotyledons spreading, radicle short, blunt, next the hilum.—Distrib. Chiefly natives of the tropical and temperate Asiatic mountains and United States, a few are Australian; species about 80.

Tribe I. *Magnolice*. *Flowers* bisexual. Erect shrubs or trees. *Stipules* conspicuous, convolute and embracing the leaf-buds, deciduous. *Carpels* on an elongated axis.

Carpels not separating from the carpophore; dehiscing dorsally.

- Carpophore sessile, carpels closely packed.
 Fruit, elongate, cylindric, ovules 2 ... 1. *Magnolia*.
 „ ovoid, ovules 6 2. *Manglietia*.
 Carpophore stalked, carpels distant ... 3. *Michelia*.
 Carpels when ripe separating from the sessile
 carpophore and dehiscing ventrally ... 4. *Talauma*.
 Tribe II. *Winteria*. Flowers usually bisexual. Shrubs
 or small trees. Stipules 0. Carpels in one whorl 5. *Illicium*.
 Tribe III. *Schizandraea*. Flowers unisexual. Clim-
 ing shrubs. Leaves exstipulate.
 Carpels of fruit capitate 6. *Kadsura*.

1. MAGNOLIA, Linn.

Trees or shrubs. *Leaves* evergreen or deciduous; buds enveloped in the convolute stipules, which are connate in pairs. *Flowers* large, terminal. *Sepals* 3. *Petals* 6 to 12, 2 to 4-seriate. *Stamens* numerous, many-seriate, filaments flat; anthers adnate, introrse. *Gynophore* sessile. *Carpels* many, imbricated on a long axis, 2-ovuled, persistent; stigmas decurrent on the ventral suture. *Fruit* an elongated axis, with persistent adnate 1-2-seeded dorsally dehiscing follicles. *Seeds* pendulous from the carpels by a long cord; outer walls of testa fleshy: albumen oily.—Distrib. Temp. N. America, temp. and trop. E. Asia and Japan; species about 16.

M. MAINGAYI, King, n. sp. A tree. Young branches and inflorescence densely clothed with pale shaggy hair. *Leaves* membranous, oblanceolate-oblong or obovate, acuminate, narrowed to the rounded base; upper surface glabrous, the lower glaucous, the midrib sparsely villous; nerves 16 to 20 pairs; length of blade 6 to 8 in., breadth 2.5 to 3 in., petiole .3 in. *Flowers* terminal, solitary, shortly pedunculate, buds ovoid, the stipular hood villous like the pedicel. *Sepals* 3, oblong. *Petals* about 6, of the same shape as the sepals but smaller, yellowish-white, glabrous, 1 to 1.3 in. long. *Ovaries* villous. *Ripe fruit* cylindric, 1.5 in. long by .6 in. diam.; the individual carpels ovoid, not beaked, .35 in. long, villous.

Malacca (Maingay No. 17), Perak, Penang; in dense low forest up to 2,500 feet.

2. MANGLIETIA, Blume.

Trees; foliage and inflorescence of *Magnolia*. *Sepals* 3. *Petals* 6 or more, 2- or more-seriate. *Stamens* very numerous, many-seriate; anthers linear, adnate, introrse. *Gynophore* sessile. *Ovaries* many, cohering in an ovoid head; stigma decurrent on the ventral suture;

ovules 6 or more. *Fruit* ovoid; carpels persistent, dehiscing dorsally. *Seeds* as in *Magnolia*.—Distrib. Mountains of tropical Asia; species 5.

1. *M. SEBASSA*, Miq. Ann. Ingd. Bat. IV, 71. A shrub. Adult branches with pale shining bark; young tawny villous, as are the petioles and spathoid hood of calyx. *Leaves* coriaceous, oblong or oblanceolate, acute, much narrowed at the base, glabrous and shining on both surfaces, bullate; nerves 14 to 20 pairs, prominent; length of blade 11 to 14 in., breadth 4.5 to 7 in., petiole 1 in., much thickened at base. *Flowers* solitary, terminal, on villous peduncles 2 to 3 in. long. Spathoid hood densely adpressed fulvous-sericeous. *Sepals* and petals about 9, fleshy, pale yellow, from obovate to oblong, abruptly contracted into a claw at the base, nearly 2 in. long. *Stamens* with very stout filaments. *Pistils* about 20. *Ripe carpels* (*sic* Miquel) oblong, lenticellate. Miq. Fl. Ind. Bat. Suppl. 367.

Perak, Kunstler; in dense jungle, at elevations of about 1500 feet: only once collected. Distrib. Sumatra.

The specimens collected by the late Mr. Kunstler are without fruit. They agree in other respects with the Sumatran specimens on which Miquel founded the species.

2. *M. GLAUCA*, Bl. Bat. Vorh. IX, 149. A tall glabrous tree. *Leaves* coriaceous, oval or obovate-oblong, slightly acuminate, the edges slightly recurved when dry, glaucescent beneath; nerves 12 to 14 pairs, not prominent; length of blade 5 to 7 in., breadth 2.5 to 3 in.; petiole .75 to 1.5 in. *Flowers* terminal, solitary, on annulate peduncles 1 to 1.5 in. long, yellowish, about 1.5 in. long. Stipular hood broadly ovate, glabrous. *Sepals* and petals 9, greenish-yellow, oblong, sub-acute, those internal smaller. *Filaments* short. *Pistils* numerous. *Ripe fruit* ovoid, the size of a hen's egg, glabrous. *Seeds* with a red fleshy arillus. Bijdr. 8; Fl. Jav. *Magnol.* 22, t. 6. Miq. Fl. Ind. Bat. Vol. I, pt. 2, p. 15.

Perak at 3,000 feet. Distrib. Java.

3. *M. SCORTECHINI*, King, n. sp. A tree. The young branches, stipules and under surfaces of the leaves minutely rufous-pubescent. *Leaves* thinly coriaceous, lanceolate, narrowed to base and apex, the latter subacute; upper surface shining, reticulations minute, distinct on both surfaces; nerves about 12 pairs; length of blade 3.5 to 4 in., breadth 1.25 in., petiole .3 to .4 in. *Flowers* solitary, axillary, on annulated pedicels shorter than the petioles: stipular hood rufous, silky. *Sepals* and petals about 12, similar, .5 in. long, linear-lanceolate. *Stamens* linear. *Fruit* ovoid (young .5 in. long) on a short gynophore, rufous-pubescent. *Carpels* 6 to 8.

Perak. Father Scortechini.

The only specimens of this have unripe fruit. The ovaries have

only 1 ovule, but apparently it is a *Manglietia* and I put it into this genus provisionally. The small rufous leaves, shining on the upper surfaces, and small axillary flowers mark it as distinct from any other Indo-Malayan *Magnoliad*.

3. MICHELIA, Linn.

Trees. *Leaves* as in *Magnolia*. *Flowers* axillary, solitary or terminal. *Sepals* and petals similar, 9 to 15 or more, 3- or more-seriate. *Stamens* as in *Magnolia*. Gynophore stalked. *Carpels* in a loose spike, stigma decurrent; ovules 2 or more. *Fruit* a lax or dense elongate spike of coriaceous dorsally dehiscing carpels. *Seeds* of *Magnolia*.—*Distrib.* About 15 species; temp. and trop. Mountains of India.

1. *M. CHAMPACA*, Linn. A tall tree, the branchlets pubescent. *Leaves* membranous, ovate-lanceolate, acuminate, rather abruptly narrowed to the base, shining above, pale and glabrous or puberulous beneath; main nerves thin, 12 to 16 pairs; length of blade 4.5 to 9 in.; breadth 2.25 to 3.5 in.; petiole 1 to 1.5 in. *Flowers* yellow, solitary, axillary or terminal, shortly pedunculate; buds narrowly ovoid, the stipular hood silky. *Sepals* oblong. *Petals* about 15, narrowly oblong, 1 in. long. *Ripe fruit* 3 to 6 in. long: individual carpels ovoid, lenticellate, woody. DC. Prodr. i, 79; Roxb. Fl. Ind. ii, 656; W. & A. Prod. i, 6; Wight III. i, 13; Blume Fl. Jav. *Magnol.* t. 1, Bijdr. 7; H. f. & T. Fl. Ind. 79. Hook. fil. Fl. Br. Ind. I, 42; Miq. Fl. Ind. Bat. Vol. I, pt. ii, 16; *M. rufinervis*, DC. l. c. 79; Bl. Bijdr. 8; *M. Doldsopa*, Ham. ex DC. l. c.; Don Prodr. 226; Wall. Tent. Fl. Nep. t. 3; *M. aurantiaca*, Wall. Cat., Plant. As. Rar. t. 147. *M. Rheedii*, Wight III. i. 14, t. 5, f. 6. *M. pubinervis*, Bl. Fl. Jav. *Magnol.* p. 14, t. 4.

In temperate forests in the Straits Settlements, but not common. *Distrib.* India.

2. *M. MONTANA*, Bl. in Verh. Bat. Gen. IX, p. 153. A glabrous tree. *Leaves* thinly coriaceous, shining, obovate or obovate-rotund, shortly and abruptly apiculate, rather suddenly narrowed to the base; nerves 10 to 12 pairs, thin, spreading; length of blade 6.75 in., breadth about 4 in.; petiole, slender .75 in. *Flowers* white, 1.5 in. in diam., solitary, terminal or axillary, on annulate peduncles about .5 in. long. Buds cylindrical. *Sepals* and petals about 8, oblanceolate or lanceolate. *Pistils* 3 to 4. *Carpels* usually single, sub-globular, 1.5 in. long, the walls lenticellate, woody, .5 in. or more thick. Bl. Bijdr. 7, Fl. Jav. *Magnol.* p. 15, t. 5; Miq. Fl. Ind. Bat. Vol. I, Pt. ii, 17.

Perak, at low elevations. Java, on the mountains. *Distrib.* Eastern Himalaya.

Specimens from the E. Himalaya have less obovate leaves, and rather

larger flowers on longer peduncles: but in other respects they agree with the Java plant. This species is readily distinguished by its enormously large, solitary, woody carpels.

4. TALATUMA JUSS.

Trees or shrubs. *Leaves* and inflorescence of *Magnolia*. *Sepals* 3. *Petals* 6 or more, in 2 or more whorls. *Stamens* very numerous, many-seriate: anthers linear, introrse. *Gynophore* sessile. *Ovaries* indefinite, 2-ovuled, spiked or capitate: stigmas decurrent. *Carpels* woody, separating from the woody axis at the ventral suture, and dehiscing so as to leave the seeds suspended from the axis by an elastic cord. *Seeds* of *Magnolia*. Distrib. Tropics of Eastern Asia, & South America: Japan. Species about 18.

1. *T. LANIGERA*, Hook. fil. & Th. Fl. Br. Ind. I, 40. A small tree. Young leaves, petioles and branches, the peduncles, outer surface of the stipular involucre enveloping the calyx, and the ovaries densely fulvous-tomentose. *Leaves* sub-coriaceous, oblong or oblanceolate, abruptly and shortly acuminate, narrowed at the base, when adult shining and glabrous except on the lower half of the midrib below; length of blade 9 to 12 in., breadth 2.5 to 4 in.; petiole 1 to 1.5 in., thickened below. *Sepals* and petals white, ovate, tomentose at the very base. *Ripe fruit* 3 to 4 in. long by 2 in. broad; the carpels glabrescent when quite ripe, beaked, 1.5 in. long.

In open forest on low hills; Perak and Malacca.

From Miquel's description of his *T. villosa*, (Fl. Ind. Bat. Suppl. 366,) that species and this must be very closely allied; and, if they are identical, Miquel's name, dating 1860, must take precedence of Hf. & T.'s, which was published in 1875.

2. *T. ANDAMANICA*, King, n. sp. A glabrous shrub or small tree. *Leaves* sub-coriaceous, oblanceolate-oblong, rarely lanceolate, the apex (usually rather abruptly) acute, below gradually narrowed to the petiole; both surfaces shining; main nerves 10 to 14 pairs, thin but prominent below; length of blade 7 to 10 in., breadth 2.5 to 3.5 in.; petiole .5 to 1 in., expanded at the base. *Flowers* solitary, sub-globose, 1.5 in. long: on thick terminal annulated pubescent peduncles 1 in. long: stipular hood of calyx glabrous. *Sepals* 3. *Petals* 6 ovate or obovate. *Ripe fruit* globose, pyriform, 1.5 in. long; the individual carpels rhomboid, 6 in. long and nearly as broad, shortly beaked: seeds .4 in. long.

Andamau Islands, on Mount Harriet.

In leaf this closely resembles *T. Rabaniana*, H. f. and Th., but has smaller flowers and fruit. The individual carpels of this are not more than a third the size of those of *T. Rabaniana*, which are more than 1 inch long and narrowly oblong and not rhomboidal.

3. *T. MUTABILIS*, Bl. Fl. Jav. *Magnol.* p. 35, t. 10, 11, 12, fig. B. A glabrous shrub. *Leaves* oblong-lanceolate, acute at either end, slightly unequal at the base, sub-coriaceous, shining on both surfaces; nerves about 12 pairs, spreading; length of blade 5 to 8 in., breadth 2.25 to 2.75 in.; petiole .75-8 in., thickened at the base, minutely muriculate when dry as is the midrib. *Flowers* solitary, terminal, on annulate peduncles about 1.5 in. long; stipular hood fuscous-villous. *Sepals* 3, broadly ovate. *Petals* 6, in 2 whorls, broader than the sepals, sometimes obovate, concave, connivent, passing from rosy green to reddish brown. *Ripe fruit* ovoid, 1.5 to 2 in. long, pubescent at first, ultimately glabrous: individual carpels, rhomboid, lenticellate, with blunt recurved beaks .75 to 1.25 in. long. Korth. in Ned. Kruik. Arch. II, 98; H. f. and Th. Fl. Ind. I, 74; Hook. fil. Fl. Br. Ind. I, 40; Miq. Fl. Ind. Bat. Vol. I, pt. ii, 14: *Manglietia Candollei*, Wall. Cat. (not of Bl.).

In the Straits Settlements, in shady damp spots near water. Distrib. The Malayan Archipelago.

A very variable shrub of which Blume distinguishes 3 varieties. All the specimens I have seen from the Straits have glabrous leaves: but Blume and others describe the leaves as often pubescent or even pilose below.

4. *T. KUNSTLERI*, King, n. sp. A tree, 25 to 30 feet high; glabrous, except the peduncle and unripe carpels. *Leaves* oblong-lanceolate, acuminate at base and apex, thinly coriaceous, both surfaces shining, nerves 10 to 14 pairs, length of blade 6 to 9 in., breadth 1.75 to 2.5 in.; petiole .5-1.25 in., slender, the base much thickened. *Flowers* terminal, solitary, on ovoid, scarcely expanding, .85 in. long, erect pubescent annulate peduncles 1 in. long. *Sepals* 3 and petals 6 scarcely exceeding the stamens, broadly elliptic, fleshy, glabrous, waxy white. *Anthers* sessile, more than .5 in. long. *Pistils* 6 to 8, linear, pubescent. *Ripe fruit* ovoid, pointed, 1.25 in. long and .75 in. in diam.; individual carpels .75 to 1 in. long, with short stout sub-terminal beaks.

Perak, in dense forest at elevations of from 3,500 to 4,000 feet.

I here subjoin a description of a new-species from Siam.

5. *TALAUMA FORBESII*, King, n. sp. A small tree or shrub; glabrous except the peduncles which are adpressed villose. *Leaves* oblong-lanceolate, acuminate both at base and apex, green and shining on both surfaces, thinly coriaceous, nerves 12 to 15 pairs, length of blade 4.5 to 6 in., breadth 1 to 1.5 in. *Flowers* terminal, solitary, erect, .75 in. long, on stout peduncles. *Stipular hood* of calyx densely covered with adpressed, fulvous silky hair; buds pointed. *Sepals* and petals about the same length, white, nearly glabrous. *Ripe fruit* 1.25 in. long; the individual carpels .6 in. long, ovate, rugose, with short terminal beak. *Seeds* 4 in. broad, by 3 in. long, the base compressed.

Sumatra, on Kaiser's Peak &c. at elevations of 5,000 to 6,500 feet. Forbes, Nos. 1853, 2066 and 2204.

This resembles *T. pumila*, but its leaves are not glaucous beneath and they have more nerves: moreover the flowers are smaller and not drooping, the petals ovate and not obovate, and the carpels are only about half the length of those of that species.

5. ILLICIUM, Linn.

Evergreen aromatic shrubs or small trees. *Leaves* quite entire, pellucid-dotted. *Flowers* bi-sexual or unisexual, solitary or fascicled, yellow or purplish. *Sepals* 3 to 6. *Petals* 9 or more, 3- many seriate. *Stamens* indefinite, filaments thick: anthers adnate, introrse. *Ovaries* indefinite, 1-seriate, 1-ovuled; style subulate, recurved. *Fruit* of spreading compressed hard follicles. *Seeds* compressed, testa hard, shining; albumen fleshy. *Distrib.* North America, China, Indo-Malaya; species about 6.

T. CAMBODIANUM, Hance in Journ. Bot. 1876, p. 240. A small glabrous tree. *Leaves* opposite or in whorls of 3 or 4, coriaceous, oblanceolate or obovate-lanceolate, rarely lanceolate, acuminate, entire; length of blade 3 to 4.5 in., breadth 1 to 2 in., petiole less than 5 in. *Flowers* red to white, 4 in. in diam., on long, slender, axillary pedicels, solitary or in groups of 3 or 4. *Sepals* 3 or 4, rotund. *Petals* about 9, diminishing in size inwards, ovate-oblong, blunt. *Stamens* 9 to 13 in a single row, the filaments about as long as the anthers. *Follicles* 8 to 12, beaked, radiate. *Pierre*, Flore Forestiere de la Cochinchine, t. 4.

Perak, in dense forests at elevations of from 3,600 to 7,000 feet.

There is some variability as to the shape and size of the sepals: sometimes they are triangular and much smaller than the petals, in other specimens they resemble the petals both in size and shape. The stamens also vary in number, but they never form more than a single row. The texture of the leaves in some plants is thin and membranous, in others almost coriaceous. It is possible there may be two species included in this.

T. EVENIUM, King, n. sp. A small glabrous tree. *Leaves* very coriaceous, opposite or in whorls of 3, oblanceolate or obovate-oblong, the apex with an abrupt blunt short acumen, the base oblongate-cuneate, gradually narrowed to the short thick petiole; nerves undistinguishable (when dry); length of blade 3.5 to 5 in., breadth 1.25 to 2 in.: petiole .3 in. or less. *Flowers* globular, 2 in. in diam., pedicellate, solitary or in 2 to 3- flowered racemes; pedicels with a few minute bracteoles near the apex, about 1 in. long. *Sepals* and petals 8 or 9, rotund, fleshy, similar, or the former a little smaller. *Stamens* 30 to 50, in several rows,

filaments shorter than the anthers; connective of outer stamens narrow, of the inner broad. *Female flowers* unknown.

Perak, Seortechini.

This species was collected only once by the late Father Seortechini. All the flowers which I have seen are male; and, as no unisexual species of this genus has hitherto been described, I have modified the generic definition accordingly. This differs from *T. Cambodianum* in having very coriaceous leaves with shorter petioles, smaller flowers, and much more numerous stamens.

6. KADSURA, Kaempfer.

Climbing glabrous shrubs. *Leaves* exstipulate. *Flowers* unisexual, white, yellow or reddish, axillary, or in the axils of scales near the base of short lateral leafy branches. *Sepals* and *petals* 9 to 12, imbricate in about 3 series. ♂ *Stamens* 5 to 15 or more, in a spiral series; filaments very short, free or subconnate, often fleshy; anthers free or subimmersed in a fleshy head of confluent filaments, cells small remote. ♀ *Ovaries* many, densely imbricated; stigma sessile; ovules 2 to 4. *Fruit* a globose head of indehiscent, fleshy, 1-seeded carpels. *Seeds* 1 or 2, suspended, albumen fleshy, testa crustaceous; embryo minute.—Distrib. Temp. and subtrop. Asia: species about 7.

1. *K. SCANDENS*, Bl. Fl. Jav. *Schizandrea*, p. 9, t. 1. A woody glabrous climber 30 to 40 feet long; the bark dark-coloured, irregularly striate. *Leaves* coriaceous, broadly ovate to ovate-oblong, shortly acuminate, entire, the base rounded very slightly decurrent towards the petiole; main nerves about 5 pairs, sub-erect; length of blade 4 to 6 in., breadth 2 to 4 in.; petiole about 1 in., expanded at the base. *Flowers* axillary, with a few from the trunk below the leaves, solitary, on bracteolate peduncles, those of both sexes similar. *Ovary* of 3 triangular sepals much shorter than the petals and united at the base. *Petals* ovate-oblong, blunt, fleshy, erecto-patent, sub-concave. *Male flowers* with numerous short, cuneate, equal, stamens densely packed on an ovoid, fleshy, receptacle; the connective fleshy, the anthers sub-truncate, 2-celled. *Female flowers* without stamens, the ovaries numerous, compressed; the stigmas sessile, elongate, fleshy. *Ripe fruit* sub-globose, 2 to 2.5 in. in diam.; the individual carpels sessile, globose or subcompressed, fleshy, mucronate or beaked, less than .5 in. in diam. Miq. Fl. Ind. Bat. Vol. I, Pt. ii, 19; *K. cauliflora*, Bl. l. c. p. 11, t. 2; *Sarcocarpum scandens*, Bl. Bijdr. 21.

Perak, Penang; at low elevations. Distrib. Java, Sumatra, and probably in the other islands of the Archipelago.

2. *K. CAULIFLORA*, Bl. Fl. Jav. *Schizand.* 11, t. 2. A stout woody

climber, 30 to 40 feet long; bark of young shoots dark, smooth; that of the main stem corky, furrowed, lenticellate. *Leaves* ovate-rotund or broadly ovate, slightly and rather abruptly acuminate, the base broad and rounded; nerves 5 to 7 pairs, ascending; length of blade 6 to 7 in., breadth 3·4 to 4·5 in., petiole 1 to 1·5 in. *Flowers* usually from the stem below the leaves, solitary or fascicled, on bracteolate peduncles; rarely axillary. *Sepals* and *petals* as in the last, but larger and more ovate. *Carpels* on pedicels ·5 in. long. Miq. Fl. Fl. Ind. Bat. Vol. I, pt. 2, p. 19.

Perak, Seorteehini and King's Collector.

This is very near *K. scandens*, but has corky bark, larger leaves, larger and less orbicular petals, and the flowers are mostly on the old wood and rarely axillary.

3. *K. ROXBURGHIANA*, Arn. in Jard. Mag. Zool. and Bot. II, 546. A glabrous woody and stout climber, with rough bark. *Leaves* membranous, ovate, obovate or oblong, acute or shortly acuminate, entire, the base narrowed; main nerves 7 to 8 pairs, not prominent; length 4 to 6 in., breadth 1·75 to 2·5 in., petiole ·5 in. *Flowers* 5 in. in diam., axillary, solitary, on bracteolate pedicels ·5 in. or more long. *Sepals* and *petals* rotund, concave, fleshy. *Filaments* connate into a column, the upper the smaller. *Ripe fruit* globose, 1 to 2 in. in diam. *Carpels* connate with rounded tops. Hook. fil. & Thoms. Fl. Ind. I, 83; Hook. fil. Fl. Br. Ind. I, 45. *Kadsura japonica*, Wall. Tent. Fl. Nep. t. 12. *Uvaria heteroclita*, Roxb. Fl. Ind. ii, 663.

Andamaus. Distrib. The base of the Eastern Himalaya and Khasia Hills.

4. *K. LANCEOLATA*, King, n. sp. A slender woody climber, 20 to 30 feet long. *Leaves* thinly coriaceous, lanceolate or ovate-lanceolate, slightly unequal-sided, acuminate, the base cuneate or rounded, edges slightly recurved when dry; nerves obscure, about 12 pairs; length of blade 3 to 4 in., breadth 1·5 in., petiole ·35 in. *Flowers* solitary, axillary, globular, 3·5 in. in diam., on minutely bracteolate peduncles shorter than the petioles. *Sepals* about 3, triangular, much smaller than the petals. *Petals* about 9, rotund or broadly ovate, cream-coloured, fleshy, slightly concave. *Stamens* as in *K. scandens*. *Ripe fruit* globular, ·75 in. in diam. or less. *Pistils* numerous, the stigmas minute, subterminal. *Carpels* ovoid, the apices truncate, the minute, lateral stigmas persistent.

Perak, at elevations of from 500 to 1,000 feet.

A smaller plant than *K. scandens*, with smaller truncate carpels.

ORDER IV. ANONACEÆ. To be taken up subsequently.

ORDER V. MENISPERMACEÆ.

Climbing or twining, rarely sarmentose, shrubs. *Leaves* alternate, entire or lobed, usually palmnerved; stipules 0. *Flowers* small or minute, solitary fascicled cymose or racemed, dioecious, sometimes 3-bracteolate. *Sepals* 6 (rarely 1 to 4, or 9 to 12), usually free, imbricate in 2 to 4 series, outer often minute. *Petals* 6 (rarely 0 or 1 to 5), free or connate. ♂ *Flowers*: *Stamens* hypogynous, usually one opposite each petal, filaments free or connate; anthers free or connate, 2-celled. Rudimentary carpels small or 0. ♀ *Flowers*: *staminodes* 6 or 0. *Ovaries* 3 (rarely 1, or 6 to 12); stylo terminal, simple or divided; ovules solitary (2 in *Fibraurea*), usually amphitropous. *Ripe carpels* drupaceous, with the style-scar subterminal, or by excentric growth subbasal. *Seed* usually hooked or reniform, often curved round an intrusion of the endocarp (condyle Miers), albumen even or ruminant or 0; cotyledons flat or semiterete, foliaceous or fleshy, appressed or spreading.—A large tropical order; genera 32; species about 100.

Tribe I. *Tinosporeæ*. *Flowers* 3-merous. *Ovaries* usually 3. *Drupe* with a subterminal rarely ventral or subbasal style-scar. *Seed* oblong or subglobose; albumen copious or scanty; cotyledons foliaceous, usually spreading laterally.

Drupe with a terminal or subterminal style-scar.

- | | |
|--|-----------------------------|
| Sepals 6; petals 6; filaments free ... | ... 1. <i>Tinospora</i> . |
| Sepals 9; petals 6; filaments free ... | ... 2. <i>Tinoniscium</i> . |
| Sepals 6; petals 0; filaments free ... | ... 3. <i>Fibraurea</i> . |

Drupe with a subbasal style-scar.

- | | |
|-------------------------------------|---------------------------|
| Sepals 6; filaments all connate ... | ... 4. <i>Anamirta</i> . |
| Sepals 9; outer filaments free ... | ... 5. <i>Coccinium</i> . |

Tribe II. *Cocculææ*. *Flowers* 3-merous. *Ovaries* usually 3. *Drupe* with a subbasal rarely subterminal style-scar. *Seed* horse-shoe shaped, albumen copious; embryo slender, cotyledons linear or slightly dilated.

Sepals 3 to 10, all imbricate; petals 4 to 6, stamens 6 to 10, ovaries 3 to 6, style canaliculate sub-3-lobed ...

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|---|------------------------------|
| | ... 6. <i>Hypserpa</i> . |
| Sepals 9, the inner 3 valvate; petals 3 or 6, ovaries 3, style compressed ... | ... 7. <i>Limacia</i> . |
| Petals 6; ovaries 3 to 6; styles subulato ... | ... 8. <i>Cocculus</i> . |
| Petals 6; ovaries 3; style forked ... | ... 9. <i>Pericampylus</i> . |

Tribe III. *Cissampelidææ*. *Flowers* 3 to 5-merous. *Ovaries* usually solitary. *Drupe* with a subbasal style-scar; endocarp dorsally muricate or echinate. *Seed* horse-shoe-shaped, albumen scanty; embryo linear, cotyledons appressed.

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|---|
| Sepals 6 to 10, free; petals of ♂ and ♀ 3-5, free... 10. <i>Stephania</i> . |
| Sepals 4, free; petals of ♂ 4 connate, of ♀ 1 ... 11. <i>Cissampelos</i> . |

Sepals 4 to 8, connate; petals of ♂ 4 to 8 connate,

of ♀ 1, anthers sessile on a central column ... 12. *Cyclea*.

Tribe IV. *Pachygonoe*. *Flowers* usually 3-merous. *Ovaries* usually 3. *Drupes* with a subbasal or ventral style-scar. *Seed* curved, hooked or inflexed, albumen 0; cotyledons thick fleshy.

Sepals 8; petals 2; stamens 4 or 8 ... 13. *Antitaxis*.

1. TINOSPOEA, Miers.

Climbing shrubs. *Flowers* in axillary or terminal racemes or panicles. *Sepals* 6, 2-seriate, inner larger membranous. *Petals* 6, smaller. *Male flower*: *stamens* 6, filaments free, the tips thickened; anther cells obliquely adnate, bursting obliquely. *Female flower*: *staminodes* 6, clavate. *Ovaries* 3; stigmas forked. *Drupes* 1-3, dorsally convex, ventrally flat; style-scar subterminal: endocarp rugose, dorsally keeled, ventrally concave. *Seed* grooved ventrally or curved round the intruded sub-2-lobed endocarp; albumen ventrally ruminant; cotyledons foliaceous, ovate, spreading.—Distrib. Species about 8, tropical Asiatic and African.

1. *T. CRISPA*, Miers Contrib. III, 34. Young shoots glabrous, the older bark warted. *Leaves* membranous, glabrous, ovate-cordate or oblong-acuminate, entire or repand, sometimes sub-sagittate; length of blade 2 to 6 in., breadth 1 to 4 in., petiole 1 to 3 in. *Racemes* from the old wood, solitary or fasciated. *Flowers* 2 to 3, in the axils of ovate fleshy bracts, .15 in. long, campanulate, green. *Stamens* adnate to the base of the petals, anthers quadrate. *Drupe* elliptic-oblong, pale yellow, about 1.5 in. long or less. Hook. fil. Fl. B. Ind. I, 96; H. f. & T. Fl. Ind. 183; Miq. Fl. Ind. Bat. I, pt. i, 78; Kurz For. Flor. Burmah, I, 52. *Menispermum crispum*, L. *M. verrucosum*, Roxb. Fl. Ind. iii, 808. *M. tuberculatum*, Lamk. *Cocculus crispus*, DC. Prodr. i. 97; Hassk. Pl. Jav. Rar. 166. *Cocculus coriaceus*, Bl. Bijdr. 25. *C. verrucosus*, Wall. Cat. 4966 A. B.

In all the provinces, but apparently not very common. Distrib. Malayan Archipelago: tropical British India.

2. *T. ULIGINOSA*, Miers Contrib. iii, 35. All parts glabrous, the branches terete, the lax brown bark bearing many 4-lobed warts. *Leaves* subcoriaceous, remote, ovate or ovate-oblong, acuminate, sub-repand-sinate or entire, the base cordate 5-nerved; venation prominent; length of blade 3 to 4 in., breadth 1.5 to 2 in.: petiole slender, swollen at the base, 1 to 2 in. long. *Racemes* slender, axillary, longer than the leaves: pedicels 1-flowered. *Drupe* as in *T. crispum*, but with thinner endocarp. Hook. fil. Fl. B. Ind. i. 97. Hook. fil. & Thoms. Fl. Ind. 105. *Cocculus petiolaris*, Wall. Cat.

Malacca, Maingay. Distrib. Java and Borneo.

A species of which I have seen no good specimen. The foregoing description is chiefly copied from Miers.

4. TINOMISCIUM, Miers.

A scandent shrub, juice milky. *Flowers* racemed. *Sepals* 9, with 3 bracts. *Petals* 6, oblong, margins incurved. *Male flower*: *stamens* 6, filaments flattened; anthers oblong, adnate, bursting vertically. *Rudimentary carpels* 3. *Female flower* unknown. *Drupe* much compressed, ovoid-oblong, style-scar terminal; endocarp much compressed, dorsally convex, ventrally flat or slightly concave, not intruded. *Seed* almost flat, oblong; cotyledons quite flat, nearly as broad as the thin layer of albumen, very thin, closely appressed; radicle short cylindrical.—Distrib. 3 E. Asiatic species.

T. PETIOLARE, Miers Contrib. iii, 45, t. 94. Young shoots and rachises of inflorescence brown-tomentose: bark of older branches nearly glabrous, pale brown, deeply striate, very sparsely verrucose. *Leaves* membranous, glabrous, ovate-oblong, obtuse or shortly and suddenly acuminate, entire, the base rounded or truncate, 5-nerved, the nerves all sparsely pubescent and 2 of them small; length of blade 4 to 8 in., breadth 2 to 4.5 in.; petiole 2 to 5 in., slender. *Racemes* fasciculate on stem tubercles, 4 to 8 in., or even 12 in., long. *Flowers* .35 in. in diam.; sepals puberulous. *Drupe* elongate-ovoid, compressed, 1.25 in. long, and .75 in. broad; endocarp rugose, woody. Miq. Fl. Ind. Bat. i. pt. i, 87; Hook. f. Fl. B. Ind. i. 97.

Common in the Straits Settlements. Distrib. Sumatra.

ANAMIRTA, Miers.

Climbing shrubs. *Flowers* in panicles. *Sepals* 6, with 2 appressed bracts. *Petals* 0. *Male flower*: *anthers* sessile, on a stout column, 2-celled, bursting transversely. *Female flower*: *staminodes* 9, clavate, 1-seriate. *Ovaries* 3, on a short gynophore; stigma sub-capitate, reflexed. *Drupe* on a 3-fid gynophore, obliquely ovoid, dorsally gibbous, style-scar sub-basal; endocarp woody. *Seed* globose, embracing the sub-globose hollow intruded endocarp; albumen dense, of horny granules: embryo curved; cotyledons narrow, oblong, thin, spreading.

1. A. LOUREIRI, Pierre Flore Forest. Cochinchine, t. 110. Glabrous; bark of the younger branches brown, that of the older pale and slightly striate. *Leaves* sub-coriaceous, shining, ovate-rotund to broadly elliptic, abruptly and shortly acuminate, entire, the base sometimes minutely cordate 5-nerved and with 4 small pits between the nerves at

their junction with the petioles; length of blade 4 to 5 in., breadth 3·5 to 4 in.; petiole 3 to 3·5 in. slender, swollen and bent at the base. *Racemes* extra-axillary, slender, branched, 3 to 6 in. long. *Male flowers* sessile, 1 in. in diam., anthers 9. *Female flower* unknown; ripe inflorescence stout, woody, a foot or more long; pedicel of ripe fruit much thickened, clavate, rugose; *ripe drupe* transversely ovoid, sub-compressed, 1·25 long by nearly 1·5 broad; pericarp, thick, fibrous, pulpy; endocarp woody, rugose.

Malacca, Maingay No. 116, 115 (in part). Perak, common. Distrib. Cochin-China.

An enormous climber, often with a stem 4 in. in diameter. The leaves and male flowers are excellently figured by M. Pierre, who however does not appear to have seen the ripe fruit.

FIBRAUREA, Loureiro.

Glabrous climbing shrubs. *Leaves* ovate to oblong, 3-nerved. *Flowers* in panicles, *Sepals* 6, with 3 minute bracts, inner larger. *Petals* 0. *Male flower*: *stamens* 6, filaments clavate; anthers terminal, adnate; cells spreading, bursting vertically. *Female flower*: *staminodes* 6. *Ovaries* 3, ovoid, 2-ovuled; stigma sessile, punctiform. *Drupe* 1-seeded, oblong, terete, style-scar subterminal; endocarp oblong, dorsally convex, ventrally flattened and channelled, hardly intruded. *Seed* oblong, terete, reniform on a transverse section; albumen copious, horny; cotyledons foliaceous, longitudinally curved, oblong, very thin; radicle short, cylindrical.

1. *F. CHLOROLEUCA*, Miers Contrib. iii, 42. Glabrous, the branches striate; bark of the young branches brown, of the old pale. *Leaves* coriaceous, ovate-oblong, shortly acuminate; the base rounded, 5-nerved (2 of the nerves joining the central one half an inch above the base); venation inconspicuous; length of blade 5 to 9 in., breadth 2·5 to 4 in.; petiole 2 to 4 in., rather slender but swollen and curved towards the base. *Panicles* extra-axillary, or from the stem below the leaves, slender, lax, their branches horizontal, 3 to 8 in. long. *Male flowers* 2 in. in diam., shortly pedicellate; filaments clavate, flattened. *Female flower* unknown; the ripe female inflorescence slender, stouter than the leaf-petioles, about 1 foot long. *Ripe drupes* on rather slender terete pedicels which are capitate at the apex and ·5 in. long, ovoid, smooth, pulpy, rather more than 1 in. long, ·75 in. in diam., endocarp smooth.

Malacca, Perak; not uncommon. Distrib. Sumatra, Borneo.

This appears to me to be a different plant from Loureiro's *F. tinctoria*, the type of which is in the British Museum.

7. COSCINIUM, Colebrooke.

Climbing shrubs. *Flowers* in dense globose heads. *Sepals* 6, with a bract, orbicular. *Petals* 3, large, spreading, elliptic. *Male flower*: *stamens* 6, filaments cylindric, 3 inner connate to the middle; anthers adnato, outer 1- inner 2-celled, bursting vertically. *Fem. flower*: *staminodes* 6. *Ovaries* 3-6, subglobose; styles subulate, reflexed. *Drupes* globose; endocarp bony. *Seed* globose, embracing a globose intrusion of the endocarp; albumen fleshy, ruminant in the ventral face; embryo straight, cotyledons orbicular, spreading, thin, sinuate, laciniate, or fenestrate.—*Distrib.* Species 2; tropical Asiatic.

1. *C. FENESTRATUM*, Colebrooke in Trans. Linn. Soc. xiii, 65. Young shoots faintly striate, shortly tomentose, often ferruginous. *Leaves* coriaceous, very slightly peltate, rotund-ovate, acute or shortly acuminate, the base truncate and sometimes sub-sinuate, shining above, yellow-tomentose beneath, except the 7 stout glabrous nerves; reticulations prominent; length of blade 5 to 7 in., breadth 4 to 6 in.; petiolo 2 to 3 in., swollen and bent at base. *Flowers* in small pedunculate heads, in extra-axillary racemes shorter than the leaves. *Petals* orbicular and, like the sepals, persistent. *Ripe drupes* on stout pedicels with capitate apices, globose, tomentose, .75 in. in diam.; cotyledons laciniate. Miers in Hook. Bot. Mag. t. 6458; Contrib. iii. 22, t. 88; H. f. & T. Fl. Ind. 178. Hook. fil. Fl. Brit. Ind. i. 99. *C. Maingayi*, Pierre Fl. Coch. Chine. *C. Wallichianum* and *Wightianum*, Miers in Tayl. Ann. Ser. 2, vii. 37, Contrib. iii. 23. *Menisp. fenestratum*, Gærtu.; DC. Prod. i. 103; Roxb. Fl. Ind. iii. 809. *Cocculus Blumeanus*, Wall. Cat. 4971, partly: *Pereira medica*, Lindl. Fl. Med. 307.

Straits Settlements, at low elevations, not so common as the next. *Distrib.* Ceylon, and perhaps some of the Malayan Islands.

The Ceylon specimens have larger leaves and a more condensed inflorescence than the Malayan; but the flowers are alike. Pierre's species *C. Maingayi* is founded on Maingay's Malacca specimens (Kew. *Distrib.* 117) but I cannot see that they differ specifically from his No. 118, or from Wallich's.

2. *C. BLUMEANUM*, Miers Contrib. iii, 23. Young shoots sub-striate, tawny-tomentose. *Leaves* coriaceous, peltate, oblong, elliptic, rarely ovate-rotund, obtuse or acute, the base rounded or truncate, sometimes sub-sinuate, shining above, white-tomentose beneath, the 7 nerves bold and prominent on lower surface as are the reticulations, length of blade 8 to 12 in., breadth 4 to 7 in.; petiolo 4 to 6 in., swollen at base and apex. *Male inflorescence* 5 in. long, racemose, densely ferruginous-tomentose; the flower heads .35 in. in diam. *Female inflorescence* from the stem, 8 in. long, its branches horizontal: drupos globular, tomen-

tosc. Hook. fil. & Thoms Fl. Ind. 179; Hook. fil. Fl. B. Ind. i. 99; Miq. Fl. Ind. Bat. i. Pt. 1, 77; *Cocculus Blumeanus*, Wall. Cat. 5971 partly.

Climbing like the last on high trees. I have not seen specimens of the ripe drupe.

LIMACIA, Loureiro.

Climbing shrubs or small trees: flowers in racemes or panicles. *Sepals* 9, tomentose, in three series; the two outer smaller, ovate; the inner large, rotund, concave, valvate. *Petals* 3 or 6, small, (as large as the outer 3 sepals), obovate, clawed, glabrous, embracing the stamens. *Stamens* 3 or 6, free, sub-equal; filaments short, erect, thickened upwards; anthers connivent, cordate, 2-lobed. *Fem. flower*: *sepals* and *petals* as in male; *staminodes* 6, clavate. *Ovaries* 3, hirsute. *Style* short. *Drupe*s 3, usually 1 by abortion, obovoid or reniform, fleshy; style-scar subbasal; endocarp 3-celled, the 2 lateral cells empty. *Seed* elongate, embracing the intruded endocarp; embryo slender, the cotyledons linear, plano-convex. Distrib. Tropical Asia.

1. *L. TRIANDRA*, Miers Contrib. iii, 112. Branches closely striate, puberulous when young, glabrous when adult. *Leaves* membranous, ovate-lanceolate, acuminate, 3-nerved above the rounded base, length of blade 3 to 5 in., breadth 1.5 to 2 in., petiole about .5 in. *Racemes* supra-axillary, shorter than the leaves, usually solitary, puberulous; bracts and flowers minute. *Stamens* 3, free, the filaments cuneate; anthers large, the cells divergent. Hook. fil. Fl. B. Ind. i. 100; Miq. Fl. Ind. Bat. i. pt. 1, 80. Kurz For. Flor. Burm. i, 55; H. f. & T. Fl. Ind. 188. *L. Amherstiana* and *Wallichiana*, Miers l.c. 112, 113. *Menisp. triandrum*, Roxb. Fl. Ind. iii. 816. *Cocculus triandrus*, Colebrooke in Trans. Linn. Soc. xii. 64; Wall. Cat. 4962, 4959 C. 4958 L.

Penang. Distrib. Burmah.

2. *L. OBLONGA*, Miers Contrib. iii. 109. Scandent or shrubby; branches minutely striate, rusty-puberulous when young. *Leaves* membranous, glabrous, oblong-lanceolate or broadly elliptic, acute or mucronate; the base rounded, 3-nerved; reticulations few, bold, pubescent like the nerves and petiole; length of blade 4 to 7 in., breadth 2.25 to 3.5 in., petiole .75 to 1.25 in. *Male panicles* slender, extra-axillary, usually in pairs, much longer than the leaves, branched, rusty-pubescent. *Stamens* 6, filaments thickened upwards but not cuneate. *Female inflorescence* much shorter. *Drupe* transversely reniform, compressed, glabrous, pulpy, rugose when dry, .75 in. long, stylar scar on a sub-basal projecting horn. Hook. fil. & Th. Fl. Ind. 189; Hook. fil. Fl. B. Ind. i. 100; Miq. Fl. Ind. Bat. i. Pt. i, 80. *Cocculus oblongus*, Wall. Cat.

Common in all the Straits Settlements.

Miers remarks that Wallich describes the species as a bush. Mr. Kunstler, who collected it at various places in Perak, describes one set of his specimens (No. 6184) as bushes of 8 to 10 feet: the other he describes as climbers. Between the male flowers of these two I can detect no difference. The species is at once recognised by the length of the panicles of male flowers.

3. *L. VELUTINA*, Miers Contrib. iii. 110. Whole plant, but especially the young branches, olivaceous-tomentose. *Leaves* thinly coriaceous, ovate-oblong, often slightly obovate, obtuse, acute or shortly and finely acuminate, the base acute or rounded; when adult glabrous and shining above except the midrib; beneath olivaceous-pubescent; 3-nerved; length of blade 3.5 to 5.5 in., breadth 1.5 to 2.25 in.; petiole 5 to .75 in., stout, terete. *Cymes* shorter than the petiole, umbellate, in axillary fascicles of 2 to 6. *Male flowers* small. *Stamens* 6, filaments much thickened upwards; anthers large, 2-celled. *Drupes* 1 or 2, transversely reniform, very little compressed, sparsely tomentose; otherwise as in the last. Hook. fil. Fl. Br. Ind. I. 100; Miq. Fl. Bat. i. Pt. i, 80; Kurz For. Flor. Burmah I, 55; H. f. & T. Fl. Ind. 189. *L. inornata*, Miers l. c. iii. t. 109. *Cocculus velutinus*, Wall. Cat. 4970.

Var. *GLABRESCENS*, leaves nearly glabrous. *L. distincta*, Miers Contrib. iii, 111, t. 109.

In Forests in the Straits Settlements. Distrib. Sumatra.

A slender climber 15 to 20 feet long: readily recognised by the yellowish olivaceous tomentum, and short cymose inflorescence.

4. *L. KUNSTLERI*, King, nov. spec. Branches, petioles, and nerves of leaves softly pubescent. *Leaves* sub-coriaceous, glabrous, pale beneath, shortly petiolate, lanceolate, mucronate, the base cuneate, 3-nerved; reticulations wide, distinct; length of blade 1.5 to 2.5 in., breadth .5 to 1 in., petiole 2 in. *Cymes* pedunculate, axillary, solitary, little longer than the petioles; or in terminal racemes. *Male flowers* small. *Stamens* 6, the filaments short, clavate; anthers large, cordate, 2-celled, connivent.

North Coast of Singapore near the Sea; King's Collector, No. 70.

This very distinct species has been gathered only once. Only the male flowers are known, but they are unmistakably those of a *Limacia*. The species is distinguished by its shortly petiolate small leaves, and numerous short cymes which (toward the end of the branches) are arranged in racemes.

HYPSEPERA, Miers.

Climbing shrubs. *Flowers* in short axillary cymes. Parts of flower varying in number. *Sepals* in three rows, the outer 3 bractiform

and hairy: the inner 6 to 8 much larger; all imbricate, glabrous. *Petals* 4 to 6, smaller than the inner sepals, oblong, incurved at the apex, rather fleshy. *Stamens* 6 to 10, free, in two series; filaments compressed, thickened upwards: anthers ovate, 2-celled. *Female flower* (*sic* Miers) *Sepals* 8, oblong, all imbricate. *Petals* 5 or 6, oblong, concave. *Staminodes* 6, clavate. *Ovaries* 6, rarely 3. Style very short. *Drupes* 2-3, transversely ovate, fleshy; endocarp bony, sub-globose, slightly compressed, with radiating grooves, and with a single lunate cell: embryo terete, slender; radicle as long as the cotyledons.

1. H. TRIFLORA, Miers Contrib. iii, 102. Branches striate, the youngest pubescent. *Leaves* small, sub-coriaceous, shining, glabrous, oblong-lanceolate, tapering gradually to the rather blunt minutely mucronate apex; the base rounded, 3-nerved; reticulations fine, but rather obscure, as are the nerves; length of blade 1.5 to 3.5 in., breadth .5 to 1.25 in., petiole .3 to .5 in. *Cymes* about 3-flowered, little longer than the petioles, usually solitary, axillary and supra-axillary, the female shorter.

Malacca; Griffith, Maingay (Kew Distrib., 123): Perak; Scortechini, King's Collector. Distrib. Sumatra.

The Perak specimens agree with the types of Miquel's *Limacia microphylla* from Sumatra in Herb. Calcutta; and they do not agree in externals with the Indian *L. cuspidata*. Ripe fruit of this is unknown. But the flowers are so different from those of *Limacia* that I think it ought not to be included in that genus, and I further venture to think that Miers's genus *Hyppserpa* has a sufficiently sure basis on the structure of the flowers alone.

10. COCCULUS, DC.

Climbing or sarmentose shrubs, rarely suberect. *Petiole* not dilated at the base. *Flowers* in panicles. *Sepals* 6, 2-seriate, outer smaller. *Petals* 6, smaller, usually auricled. *Male flower*: *stamens* embraced by the petals; anthers sub-globose, cells bursting transversely. *Female flower*: *staminodes* 6 or 0. *Ovaries* 3 to 6: styles usually cylindrical. *Drupes* laterally compressed; endocarp horse-shoe-shaped, dorsally keeled and tubercled, sides excavate. *Seed* curved, albumen fleshy; embryo annular; cotyledons linear, flat, appressed.—Distrib. All warm climates.

1. C. KUNTLERI, King, n. sp. Glabrous; the branches striate, pale. *Leaves* membranous, with long petioles, peltate, rotund, acute; nerves 9, radiating from the petiolar insertion, thin but prominent on the pale under surface; length of blade 3.25 to 4 in., breadth about .25 in. or less; petiole slender, terete, about 3 in. long. *Panicles* in fascicles of 2 to 4 from flat warty tubercles on the stem, narrow, the lateral branches only about .5 in. long, few-flowered. *Sepals* imbricate, glabrous. *Petals* 6,

each embracing a stamen. *Filaments* free, clavate; anthers broad, 4-celled. *Ripe drupes* 1 to 1.25 in. long, and about 6 in. broad, narrowly sub-obovoid, compressed; pericarp of a thin pulp; endocarp horny, narrowly horse-shoe-shaped, the edge boldly ridged, the sides with deep radiating grooves and the central part with a deep vertical hollow: embryo sausage-shaped, bent along the circumferential chamber of the endocarp.

Perak, Ulu Bubong; King's collector, Nos. 4417 and 10232.

This has the flower of *Cocculus*, but the fruit of *Stephania*. It comes nearest to the Indian *C. macrocarpus*, which has a similar though smaller fruit, and, like that species, would belong to Miers' genus *Diploclisia*. It must be near *D. pictinervis* of that author.

11. PERICAMPYLUS, Miers.

A climbing shrub. *Leaves* subpeltate; petioles slender, articulate. *Flowers* in axillary cymes. *Sepals* 6, with 3 bracts, outer smaller, inner spatulate. *Petals* 6, cuneate. *Male flower*: *stamens* 6, filaments cylindrical; anthers adnate, bursting transversely. *Female flower*: *staminodes* 6, clavate. *Ovaries* 3; styles 2-partite, segments subulate. *Drupes* subglobose; endocarp horse-shoe-shaped, dorsally crested and ochinate, sides excavated. *Seed* curved; cotyledons elongate, flat, scarcely broader than the radicle.

1. *P. INCANUS*, Miers Contrib. iii. 118, t. 3. Young branches minutely tomentose, not striate. *Leaves* membranous, orbicular-reniform, obtuse or acute, sometimes slightly retuse, mucronulate, the base truncate or sub-cordate; upper surface pubescent or glabrescent, lower tomentose; nerves usually 5; length of blade 2 to 4 in., breadth about .5 in. or more; petiole 1 to 2 in. *Cymes* pedunculate, axillary, in fascicles of about 4, 2-3-chotomous. *Flowers* minute, crowded. *Petals* 6, obovate, larger than the sepals. *Ripe drupe* the size of a pea. Hook. fil. Fl. Br. Ind. i. 102; Hf. & Th. Fl. Indica, 194; Miq. Fl. Ind. Bat. i. Pt. 1, 83. *P. ulonous*, *assamicus*, and *membranaceus*, Miers l. c. 119-122. *Cocculus incanus*, Coleb. in Trans. Linn. Soc. xiii. 57. *Cissampelos mauritiana*, Wall. Cat. 4980 (not of DC.). *Menisperm. villosum*, Roxb. Fl. Ind. iii, 812 (not of Lamk.).

A common climber. Distrib. British India, Java, Sumatra, and probably in other parts of the Malayan Archipelago.

12. STEPHANIA, Loureiro.

Climbing shrubs. *Leaves* usually peltate. *Flowers* in axillary, cymose umbels. *Male flower*: *sepals* 6 to 10, free, ovate or obovate. *Petals* 3 to 5, obovate, fleshy. *Anthers* 6, connate, encircling the top of the

staminal column, bursting transversely. *Female flower*: sepals 3 to 5. *Petals* of the male. *Staminodes* 0. *Ovary* 1; style 3 to 6-partite. *Drupe* glabrous; endocarp compressed, horse-shoe-shaped, dorsally tubercled, sides hollowed and perforated. *Seed* almost annular; cotyledons long, slender, $\frac{1}{2}$ -terete, appressed.—Distrib. Tropics of the Old World.

1. *S. HERNANDIFOLIA*, Walp. Rep. i, 96. Young branches striate, glabrous. *Leaves* membranous, broadly ovate-rotund, acute or acuminate, rarely obtuse, peltate; the base truncate, emarginate or sub-cordate; glabrous or sparsely pubescent; nerves about 10 radiating from the petiolar insertion, dark-coloured on the pale or glaucous under surface, reticulations open; length of blade 2.5 to 5 in., breadth 2.25 to 3 in. petiole 1.75 to 2 in. *Umbels* on long slender peduncles, many-flowered. *Petals* 3 to 4. *Drupe*s red, pisiform, compressed. Hook. fil. Fl. Br. Ind. i, 103; Hf. & T. Fl. Ind. 196; Miq. Fl. Ind. Bat. i, Pt. 1, 83. Miers Contrib. iii. 222. *S. intertexta*, *latifolia*, and *hypoglauca*, Miers l. c. 224, 226, 227. *Cissampelos hernandifolia*, Willd.; DC. Prodr. i. 100; Roxb. Fl. Ind. iii. 842; Wall. Cat. 4977 D, E, F, G, H, K. *C. discolor*, DC. l. c. i. 101; Bl. Bijdr. 26. *C. hexandra*, Roxb. l. c. iii. 842. *Clypea hernandifolia*, W. & A. Prodr. i. 14; Wight Ic. t. 939. *Steph. discolor*, Hassk. Pl. Jav. rar. 168.

Common in shady places. Distrib. The Malayan Archipelago, British India, Australia, Africa.

13. CISSAMPELOS, Linn.

Suberect or climbing shrubs. *Leaves* often peltate. *Male flowers* cymose. *Sepals* 4, 5 or 6, orosc. *Petals* 4, connate, forming a 4-lobed cup. *Anthers* 4, connate, encircling the top of the staminal column, bursting transversely. *Female flower*: racemed, crowded in the axils of leafy bracts. *Sepals* 2 (or sepal and petal 1 each), 2-nerved, adnate to the bracts. *Staminodes* 0. *Ovary* 1; style short, 3-fid or 3-toothed. *Drupe* ovoid, style-scar sub-basal; endocarp horse-shoe-shaped, compressed, dorsally tubercled, sides excavated. *Seed* curved; embryo slender; cotyledons narrow, $\frac{1}{2}$ -terete, appressed.—Distrib. All hot climates,

1. *C. PAREIRA*, Linn. Young branches pubescent. *Leaves* usually peltate, membranous, orbicular-reniform or cordate, obtuse and mucronate, rarely acute, base truncate to cordate, above glabrescent, below pubescent to tomentose; length 1.8 to 3 in., breadth rather greater, petiole 1 to 3 in. *Male cymes* 2 or 3, axillary, slender. *Female racemes* with large reniform or orbicular bracts. *Ripe drupes* scarlet, sub-globose, hirsute, .2 in. in diam., Hook. fil. Fl. Br. Ind. i. 104; H. f. & Th. Fl. Indica 198; Miq. Fl. Ind. Bat. i. Pt. 1. 85; DC. Prodr. i. 100; Miers' Contrib. iii. 139; *C. caepeba*, Linn. Roxb. Fl. Ind. iii. 842. *C. convo-*

lentacea, Willd. Wall. Cat. 4979; W. & A. Prod. i. 14; Roxb. l. c. *C. orbiculata*, *discolor* and *hirsuta*, Ham. DC. l. c. 101. *C. diversa*, *gral-latoria*, *eriantha*, *elata* and *delicatula*, Miers l. c. 187-189. *C. sub-peltata*, Thw. Enum. 13 & 399; Miers l. c. 195. *Menispermum orbiculatum*, Linn.

A common climber in all parts of the Settlements. Distrib. Every-where in the Tropics.

14. CYCLEA, Arnott.

Climbing shrubs. *Leaves* usually peltate. *Flowers* in axillary panicles; *Male flower*: *sepals* 4-8, connate into an inflated 4-5-lobed calyx. *Petals* 4 to 8, more or less connate into a 4 or 8-lobed corolla. *Anthers* 4 to 6, connate, crowning the staminal column, bursting transversely. *Female flower*: *sepal* 1, oblong. *Petal* 1, orbicular. *Ovary* 1; style short, 3 to 5-lobed, lobes radiating. *Drupe* ovoid, style-scar subbasal; *endocarp* horse-shoe-shaped, dorsally tubercled, sides convex, 2-locellate (as in *Limacia*). *Seed* curved; cotyledons slender, $\frac{1}{2}$ -terete, appressed. —Distrib. Tropical Asia.

1. *C. PELTATA*, H. f. & Th. Fl. Indica, 201. Branchlets striate, reflexed, pubescent or glabrous. *Leaves* coriaceous, peltate, deltoid or orbicular-ovate, acute or acuminate, often mucronate, the base truncate to cordate; above glabrous or glabrescent, beneath pubescent to tomentose, the 9 nerves rather prominent, length of blade 4.5 to 5.5 in., breadth 3.5 to 4.5 in.; petiole .2 to 2.5 in., reflexed, pubescent or tomentose, striate. *Panicles* usually longer than the leaves, the males often much branched and spreading and a foot long, the females smaller. *Calyx* campanulate, 4-lobed, glabrous or pilose externally. *Corolla* much smaller. *Drupe* pisiform, pilose; *endocarp* much tuberculate. Hook. fil. Fl. Br. Ind. i. 104; Miq. Fl. Ind. Bat. i. Pt. 1, 86; Miers Contrib. iii. 236; *C. barbata*, *Arnottii*, *versicolor*, *laviflora* and *pendulina*, Miers l. c. *Menisperm. peltatum*, Lamk. *Cocculus peltatus*, DC. Prod. i. 96. *Clypea Burmanni*, W. & A., in part. *Cyclea Burmanni*, Arnot in Wight Ill. i. 22. *Rhaptomeris Burmanni*, Miers in Tayl. Ann. Ser. 2, vii. 41.

Not common in the Straits Settlements. Distrib. Java, British India, Ceylon.

2. *C. ELEGANS*, King, nov. spec. Young branches spirally striate, puberulous, as are the petioles and panicles; otherwise glabrous. *Leaves* slightly peltate, membranous, shining on both surfaces, the reticulations minute, distinct, ovate to ovate-oblong, shortly acuminate, the base rounded or cordate, 7-nerved (4 of the nerves minute); length of blade 3 to 4 in., breadth 1.5 to 2 in., petiole about 1 in. *Male* and *female*

panicles sub-equal, slender, solitary, axillary, shorter than the leaves. *Male flowers* crowded, minute; anthers about 4, broad. *Drapes* pisiform, slightly compressed, pulp thin, endocarp boldly tubercled.

Perak; at elevations of from 1500 to 2000 feet; King's collector, Scortechini. A slender creeper 15 to 25 feet long: not common.

ANTITAXIS, Miers.

Climbers or shrubs with penninerved leaves. *Pedicels* 1-flowered, numerous, in axillary fascicles, flowers diœcious. *Male flower: sepals* eight, in decussate pairs, the two outer pairs oblong, pubescent; the two inner pairs rotund, concave, glabrous, imbricate, all increasing in size inwards. *Petals* 2, smaller than fourth row of sepals, rotund, concave. *Stamens* 4 or 8, filaments clavate, anthers sub-globose. *Female flower* unknown. *Drapes* 1-3 (usually 1) sub-globose, or pyriform: endocarp brittle, thin, sub-reniform, 1-celled. *Seed* sub-globular, concavo ventrally, albumen none; cotyledons oblong, semi-terete, thick, incurved; radicle minute.—Distrib. Eastern Archipelago.

1. *A. LUCIDA*, Miers Contrib. iii, 357. A glabrous climber, bark of young shoots dark and smooth, that of old shoots pale and warted. *Leaves* coriaceous, shining, oblong or sub-obovate-oblong, acute or acuminate, the base slightly narrowed, nerves about 6 pairs, obscure, as are the reticulations; length of blade 3 to 3·5 in., breadth 1·25 to 1·5 in., petiole ·5 in. *Female flowers* (male unknown) in fascicles. *Drapes* 1 to 3, (usually solitary) pyriform, glabrous, shining, about ·5 in. long, pericarp pulpy; endocarp thin, brittle.

On Ulu Bubong in Perak, King's collector. Distrib. Java.

A slender creeper from 40 to 60 feet long. *Male flowers* of this are unknown, and I put it into this genus on account of the structure of the fruit and from its general resemblance to *A. fasciculata*, Miers, which however differs in being non-scandent and in having tomentose drupes. Kurz's species *A. calocarpa* has 8 stamens (although he describes it as having only 4), and is also a climber with glabrous drupes. I have modified Miers' description of the genus as to the number of stamens and other particulars.

ORDER VI. NYMPHÆACEÆ.

Aquatic perennial herbs. *Leaves* usually floating, often peltate, margins involute in vernation. *Scapes* 1-flowered, naked. *Floral-whorls* all free, hypogynous or adnate to a fleshy disk that surrounds or envelops the carpels. *Sepals* 3 to 5. *Petals* 3 to 5, or many. *Stamens* many. *Carpels* 3 or more in one whorl, free or connate, or irregularly sunk in pits of the disk; stigmas as many as carpels, peltate or decurrent; ovules few,

or many and scattered over the walls of the cells, anatropous or orthotropous. *Fruit* formed of the connate carpels, or of separate and indhiscent carpels, or of the enlarged turbinate flat-topped disk with the nut-like carpels sunk in its crown. *Seeds* naked or arilled; albumen floury or 0; embryo enclosed in the enlarged amniotic sac.—Distrib. Temperate and tropical; genera 8, species 30-40.

Suborder I. *Nymphææ*. *Sepals* 4-6. *Petals* and *stamens* indefinite. *Carpels* confluent with one another or with the disk into one ovary. *Ovules* many. *Seeds* albuminous.

Sepals, *petals* and *stamens* $\frac{1}{2}$ -superior, inserted on the disk which is confluent with the carpels ... 1. *Nymphæa*.

Sepals inferior; *petals* superior; *carpels* sunk in the torus ... 2. *Barclaya*.

Suborder II. *Nelumbiææ*. *Sepals* 4-5. *Petals* and *stamens* indefinite. *Carpels* irregularly scattered, sunk in pits of the turbinate disk. *Ovules* 1-2. *Seeds* exalbuminous... 3. *Nelumbium*.

1. NYMPHÆA, L.

Large herbs; rootstock creeping. *Flowers* expanded, large, floating on long radical scapes. *Sepals* 4, adnate to the base of the disk. *Petals* in many series, inner successively transformed into stamens, all adnate to the disk. *Filaments* petaloid; anthers small, linear, introrse. *Ovaries* many, 1-seriate, sunk in the fleshy disk and forming with it a many-celled syncarp crowned by connate, radiating, stigmas: ovules many, anatropous. *Fruit* a spongy berry ripening under water. *Seeds* small, buried in pulp.—Distrib. Species 20, most temperate and tropical regions.

1. *N. STELLATA*, Willd. *Leaves* elliptic, deeply cordate, entire or with obtuse shallow sinuate teeth, often blotched with purple below, 6 to 8 in. long. *Flowers* 1.5 to 9 in. in diam., blue (white, or pink in varieties), petals 10 to 30, linear-lanceolate. *Stamens* 10 to 50, anthers with apical appendages. *Stigmatic rays* 10 to 25. *Fruit* 1.5 to 2 in. in diam. *Seeds* sub-striate. Hook. fil. Fl. B. Ind. i. 114; Hook. fil. & Th. Fl. Ind. i. 243; Wight Ic. $\frac{178}{8}$; Miq. Fl. Ind. Bat. i. Pt. ii. 90.

Common throughout the warmer parts of the Indo-Malayan region. Distrib. Australia.

Var. 1. *VERSICOLOR*, Hf. & Th. l. c. *Flower* and *leaves* intermediate between this and the next; the former white, rose or blue. *N. versicolor*, Roxb. Hort. Beng. 41; Fl. Ind. ii. 577; Bot. Mag. t. 1189; Wall. Cat. 7257. *N. punctata*, Edgew. in Trans. Linn. Soc. xx. 29. *N. Edgeworthii* and *N. Hookeriana*, Lehm. dor Gatt. Nymph. 7 and 21.

Var. 2. *PARVIFLORA*. Hf. & Th. l. c. *Leaves* and *flowers* much

smaller than in the last, the latter usually blue and sometimes not more than 1 to 2 in. in diam. *N. stellata*, Willd. W. & A. Prod. i. 17.

2. BARCLAYA, Wallich.

Aquatic herbs with short villous root-stocks and floating leaves. *Peduncles* elongate, sometimes extra-axillary. *Flowers* pink or claret-coloured. *Sepals* 5, inserted at the base of the ovary. *Petals* numerous, 3-seriate, united below into a tube which is confluent with the carpels. *Stamens* in many series inserted within the corolla tube, filaments slender, short, reflexed; the anthers pendulous, the outer imperfect. *Ovaries* about 6 to 8, confluent, the apex conical; styles tri-angular, connivent into a 10-rayed cone, stigmatiferous within: ovules numerous, orthotropous, parietal. *Berry* globose, pulpy, crowned with the corolla-tube and annular torus. *Seeds* elliptic, albumen floury, embryo small.

1. *B. MOTTLEYI*, Hook. fil. in Trans. Linn. Soc. xxiii. 157, t. 21. *Leaves* rotund, the apex sometimes bluntly apiculate, the base deeply cordate, glabrous on the upper surface, otherwise tomentose as are the peduncles; length 3 in., breadth 3.5 in., petiole 3 to 7 in. *Sepals* tomentose externally with long glabrous sub-apical tails. *Petals* linear, pink or red. *Seeds* echinate.

In ponds at low elevations in the Forest. Malacca, Griffith; Maingay, Perak, Scortechini, Wray, King's collector. Distrib. Borneo, Motley, Lobb.

Var. *KUNSTLERI*, King. *Leaves* ovate-rotund, cordate, the under surfaces and petioles pubescent or glabrous, as are the peduncles: *petals* claret-coloured; *seeds* rugose, occasionally echinate.

In similar situations with the last. Perak; King's collector, Scortechini, Wray. The leaves of this are thinner in texture than those of the typical form.

2. *B. LONGIFOLIA*, Wall. in Trans. Linn. Soc. xv. 442, t. 18. *Leaves* oblong, obtuse, the base cordate, glabrous or glabrescent, length 6 to 8 in., breadth 1 to 1.5 in., petiole 4 to 8 in. *Sepals* glabrous or glabrescent with short apical tails. *Petals* oblong, reddish within, green externally. *Seeds* echinate, Hook. fil. Fl. B. Ind. i. 115; Hook. Ic. Pl. t. 809, 810; Griff. Notul. 218, t. 57; H. f. & T. Fl. Ind. 246.

Audamans. Distrib. Burmah.

3. NELUMBIUM, Juss.

An erect large water herb with milky juice; rootstock stout, creeping. *Leaves* raised high above the water, peltate. *Flowers* rose-red white or yellow. *Sepals* 4-5, inserted on the top of the scape, caducous. *Petals* and stamens many, hypogynous, many-seriate, caducous. *Anthers*

with a clubbed appendage. *Ovaries* many, 1-celled, sunk in the flat top of an obconic fleshy torus, attachment lateral; style very short, exserted, stigma terminal, dilated; ovules 1-2, pendulous. *Carpels* ovoid, loose in the cavities of the enlarged spongy torus; pericarp bony, smooth. *Seed* filling the carpel, testa spongy, albumen 0; cotyledons fleshy, thick, enclosing the large folded plumule.—*Distrib.* Species 2, one Asiatic and Australian; the other W. Indian.

1. *N. SPECIOSUM*, Willd. *Leaves* 2 to 3 feet in diam., concave, glaucous. Peduncles and petioles 3 to 6 feet long, smooth, or with small scattered prickles. *Flowers* 4 to 10 in. diam.; petals elliptic, rose, rarely white. *Fruiting torus* flat-topped 2 to 4 in. diam. *Ripe carpels* ovoid, about .5 in. long. Wight & Arn. Prodr. i. 16; Roxb. Fl. Ind. II. 647; Wight III. i. t. 9; H. f. & T. Fl. Ind. 247; Miq. Fl. Ind. Bat. i. Pt. 2, p. 91. *N. asiaticum*, Rich. in Ann. Mus. xvii. 249, t. 9. *Nelumbo Indica*, Poir. Encycl. iv. 453. *Nelumbo*, Smith Exot. Bot. i. 59, t. 31, 32. *C. mysticus*, Salisb. Ann. Bot. ii. 75. *Nymphœa Nelumbo*, Linn.

In stagnant water throughout the Indo-Malayan region. *Distrib.* Persia, China, Japan and tropical Australia.

ORDER VII. CAPPARIDEÆ.

Herbs, shrubs or trees, erect or climbing. *Leaves* simple or palmately 3 to 9-foliolate; stipules 2 or 0, sometimes spinescent. *Inflorescence* indefinite; flowers solitary, racemed, corymbose or umbelled, regular or irregular, usually 2-sexual. *Sepals* 4, free or connate, valvate or imbricate, rarely open in bud. *Petals* 4 (rarely 2 or 0), hypogynous or seated on the disk, imbricate or open in bud. *Stamens* 4 or more, hypogynous or perigynous, or at the base of or on a long or short gynophore. *Disk* 0, or tumid, or lining the calyx-tube. *Ovary* sessile or stalked, 1-celled; style short or 0; stigma depressed or epitate; ovules indefinite, on 2 to 4 parietal placentas, amphi- or campylo-tropous. *Fruit* capsular or berried. *Seeds* angled or reniform, exalbuminous; embryo incurved.—*Distrib.* Genera 23, species 300, chiefly tropical.

1. CLEOME, Linn.

Herbs. *Leaves* simple or digitately 3 to 9-foliolate. *Flowers* solitary or racemed, yellow, rose or purple. *Sepals* 4, spreading. *Petals* 4, regular or ascending. *Stamens* 6 to 20, sessile on the disk. *Ovary* sessile or with a short gynophore; style short or 0; ovules many, on 2 parietal placentas. *Capsule* oblong or linear, valves 2, separating from the seed-bearing placentas. *Seeds* reniform. *Distrib.* Species about 80, chiefly tropical.

1. *C. HULLETTII*, King, n. sp. A much-branched, sub-decumbent, small shrub; the stem striate, puberulous, and with a few short prickles in distant pairs. *Leaves* dimorphous; those of the lower part of the stem petiolate, trifoliolate, the leaflets obovate; those of the upper part simple, sessile, ovate; all pubescent and from .5 to .75 in. long. *Flowers* solitary, axillary, about .5 in. in diam. *Stamens* 6. *Pedicels* slender, much longer than the leaves. *Capsules* terete, striate, glabrous, about 1.5 in. long; seeds large, muricete.

Singapore, in dry place by road-sides.

This is allied to the Peninsular Indian species *C. aspera*, Koen, and *C. Burmanni*, W. & A., but differs from both in its dimorphous leaves.

2. *C. VISCOSA*, Linn. An erect, glandular-pubescent, viscid herb. *Leaves* the lower with long petioles, the upper sometimes sub-sessile, 3 to 5-foliolate; leaflets obovate or ovate. *Flowers* in terminal corymbs, on long pedicels. *Petals* yellow, reflexed, about .5 in. long. *Stamens* 12 to 20. *Capsule* glandular-pubescent, striate, narrowed to the apex, 2 to 3.5 in. long. *Seeds* small, reniform, transversely ridged. Hook. fil. Fl. Br. Ind. i. 170; Miq. Fl. Ind. Bat. i. Pt. 2, 97. Bl. Bijdr. 52; DC. Prodr. i. 242; Wall. Cat. 6968. *Polanisia icosandra*, W. & A. Prodr. 22; Wight Ic. t. 2.—Rheede Hort. Mal. ix. t. 33.

A common weed at low elevations in the tropics.

2. GYNANDROPSIS, DC.

An annual, glandular-pubescent or glabrate herb. *Leaves* 5-foliolate, long-petioled. *Flowers* racemed. *Sepals* 4, spreading. *Petals* 4, spreading, long-clawed, open in bud. *Stamens* 6, filaments adnate below to the slender gynophore, spreading above. *Ovary* stalked, ovules many. *Capsule* elongate, stalked: valves 2, separating from the seed-bearing placentas. *Seeds* reniform, black, scabrous.

1. *G. PENTAPHYLLA*, DC. Prodr. i. 238. An erect, glabrous, or pubescent, spreading herb. *Leaves* on long petioles, quinato, the leaflets sessile, obovate or euneate, acute or obtuse, entire or serrulate, 1 to 1.5 in. long. *Flowers* whitish or purple, in terminal racemes, .35 to .8 in., in diam., bracts 3-foliolate. *Capsules* cylindric, pointed, striate, nearly glabrous, 2 to 4 in. long. Hook. fil. Fl. Br. Ind. i. 171; Miq. Fl. Ind. Bat. i. Pt. 1, 96. W. & A. Prodr. 21: *G. affinis*, Bl. Bijdr. 51. *Cleome pentaphylla*, Linn. Roxb. Fl. Ind. ii. 126.

Abundant in waste ground all over the tropics.

3. CAPPARIS, Linn.

Trees or shrubs, erect, decumbent or climbing, unarmed, or with stipular thorns. *Leaves* simple, rarely 0. *Flowers* white or coloured,

often showy. *Sepals* 4, free, imbricate in 2 series, or 2 outer subvalvate. *Petals* 4, sessile, imbricate. *Stamens* indefinite, inserted on the torus at the base of the long gynophore. *Ovary* stalked, 1 to 4-celled; stigma sessile; ovules many, on 2 to 6 parietal placentas. *Fruit* fleshy, rarely bursting by valves. *Seeds* many, imbedded in pulp, testa crustaceous or coriaceous; cotyledons convolute.—Distrib. Species 125, natives of all warm climates, except N. America.

Synopsis of Species.

Fruit globose or sub-globose.		
Flowers solitary, axillary	...	... 1. <i>C. Larutensis</i> .
" umbellate	...	... 2. <i>C. sepiaria</i> .
" racemose	...	... 3. <i>C. Scortechinii</i> .
Flowers supra-axillary, in rows of 2 or 3.		
Leaves 3 to 4 in. long	...	... 4. <i>C. micracantha</i> .
" 5 to 7 in. long	...	... 5. <i>C. pubiflora</i> .
Fruit much elongate, cucumber-shaped.		
Fruit 4 to 7 in. long	...	... 6. <i>C. Finlaysonian</i> .
" 3 in. long	...	... 7. <i>C. cucurbitina</i> .

1. *C. LARUTENSIS*, King, n. sp. Scandent, the young branches and petioles densely covered with minute, rusty, sub-deciduous, tomentum. *Stem* sub-striate; prickles in pairs, short, hooked. *Leaves* glabrous, coriaceous, oblong-lanceolate, obtuse or retuso, the midrib prominent, the 5 or 6 pairs of nerves obscure; length 1 to 1.25 in., breadth 4 in., petiole .2 in. *Flower-pedicels* solitary, glabrous, more than half as long as the leaves. *Flowers* .75 in. in diam., white to pink. *Sepals* fleshy, glabrous, the outer pair ovate; the inner rotund, concave. *Petals* oblong, glabrous. *Stamens* about 12. Gynophore slender, nearly 2 in. long. *Fruit* globose, with an apical beak.

Perak, at Laroot, on trees. King's Collector, No. 5103.

A woody climber, 30 to 40 feet long. The petals change from white to pink. Ripe fruit is unknown. This must be near *C. erythroclasis*, Miq.

2. *C. SEPIARIA*, Linn. A scrambling shrub. Branches divaricate, with rather distant pairs of short recurved thorns, sub-striate, the younger puberulous. *Leaves* membranous, shortly petiolate, ovate to oblong, pubescent or glabrescent, nerves 4 or 5 pairs. *Flowers*, .35 to .5 in. in diam., in terminal umbels, the pedicels slender, .5 in long; buds globose. *Sepals* oblong. *Petals* narrow, white. *Ovary* apiculate, gynophoro .25 to .5 in. long. *Fruit* pisiform, black. Hook. fil. Fl. Br. Ind. i. 177; Miq. Fl. Ind. Bat. i. pt. 2, 101; DC. Prod. i. 247; Roxb. Fl. Ind. ii. 568; W. & A. Prod. 26; Camb. in Jacq. Voy. Bot. t. 22; Dalz. & Gibs. Bomb. Flora, 10; Kurz. For. Fl. Burma. i. 66.

In hot dry places at low elevations, but not common in the Straits Settlements. Distrib. India, Ceylon, Philippines, Timor, Australia.

3. *C. SCORTECHINI*, King, n. sp. Scandent; young parts, and the inflorescence at all stages densely and minutely ferruginous-tomentose; older branches with 1 or 2 striæ, glabrescent; thorns stipular, in pairs, much shorter than the petioles, hooked. *Leaves* coriaceous, broadly lanceolate, acuminate, much narrowed at the base, smooth and shining above and the nerves obsolete; under surface ferruginous-tomentose when young, but becoming glabrescent, the midrib and 6 pairs of nerves bold and prominent; length 5 to 8 in., breadth 2 to 3 in., petiole .5 in. *Flowers* 1.5 in. in diam., on short lateral, leafy, braeteate, woody racemes. *Bracts* petiolate, ovate-acuminate, .75 in. long, deciduous. *Sepals* rotund, concavo, tomentose externally. *Petals* pink, broadly elliptic, sub-obovate, blunt, notched, the base emarginate, glabrous. *Stamens* more than 20. *Fruit* globose, 3.5 to 4 in. in diam.; the gynophore transversely wrinkled, 2.5 in. long and .6 in. in diam.

Batang Padang district in Perak. King's Collector No. 8083. Scortechini, 191.

The fruit of this has been only once collected. The species is a fine creeper, 15 to 20 feet long. It closely resembles *C. trinervia*, Hf. & Th. in many respects: but the leaves are not triple but pinnate-nerved.

4. *C. MICRACANTHA*, DC. Prod. i. 247. Shrubby, not scandent, glabrous. Branches minutely striate; the spines in pairs, stipular, one-third the length of the petioles, divergent, polished, not hooked. *Leaves* thinly coriaceous, shining, minutely reticulate, broadly lanceolate to oval, acute, mucronate; the base narrowed or rounded; midrib stout, nerves 7 to 8 pairs; length 3 to 4 in., breadth 1.5 in., petiole .3 in. *Flowers* on short pedicels, 2 or 3 in a line, supra-axillary, 1 to 1.5 in. in diam. *Sepals* and *petals* oblong; the former puberulous, the latter white. *Stamens* 15 to 20, shorter than the gynophore. *Fruit* sub-globose, smooth. Hook. fil. Fl. Br. Ind. i. 179: Miq. Fl. Ind. Bat. i. pt. 2, 99: Blume. Bijdr. 52. *C. conspicua* and *C. Finlaysonian*, Wall. Cat. 6991 and 6992 A (not B).

Generally diffused at low elevations throughout the Malayan region. Distrib. Burmah. Sir Joseph Hooker gives the size of the ripe fruit (which I have not seen) as 2 to 3 in. in diam.

5. *C. PUBIFLORA*, DC. Prod. i. 246; var. *Perakensis*, Scortechini, MSS. A straggling shrub 15 feet long, branched from the ground. Branchlets compressed, striate, glabrous; thorns in pairs, minute. *Leaves* membranous, elliptic-oblong, shortly acuminate, the base narrowed or rounded, glabrous on both surfaces, nerves (9 to 10 pairs) and reticulations rather prominent; length 5 to 7 in., breadth 2 to 2.5 in.; petiole .25 in., stout,

ehannelled. *Flowers* 1 in. in diam. on long slender pedicels, 2 or 3 in a line, supra-axillary. *Sepals* oblong, concave, the two inner recurved, the two outer pubescent externally. *Petals* white, oblong, the two posterior united at the base by a gland so as to form a short spur. *Stamens* numerous. *Gynophore* about 1 in. long, pubescent as is the ovary.

Perak. Scortechini.

Collected only once, and without fruit. In Father Scortechini's field notes, he remarks that the petals are pubescent above and round the margin of the gland, and have a purple blotch.

A straggling but non-scandent shrub, almost unarmed, the thorns being very small. This variety differs from the type as described by De Caudolle, and by Decaisne from Timor (Nouv. Ann. du Muséum, ii, 436) in having the venation of its leaves more straight and erect; otherwise it agrees.

6. *C. FINLAYSONIANA*, Wall. Hook. fil. Fl. Br. Ind. I, 179. Scandent, glabrous; the spines stipular, nearly straight, in pairs, very short, with broad bases and blackish rather blunt tips. *Leaves* coriaceous, shortly petiolate, broadly lanceolate to elliptic, shortly acuminate, slightly narrowed to the base; the under surface pale (yellow when dry) the midrib and 6 pairs of nerves very bold; reticulations minute, distinct on the upper surface; length 6 to 7.5 in., breadth 2.25 to 3 in., petiole under .5 in. *Flowers* (fide Hook. fil.) solitary or in pairs, supra-axillary, larger than in *micrantha*. *Sepals* lanceolate, acute, glabrous. *Ripe fruit* solitary, on a long stout stalk of which 1.5 in. is pedicel and the remaining 1.5 in. carpophore, cylindrical, tapering to the apex, 4 to 7 in. long, and 1 to 1.5 in. in diam., yellowish-red, glabrous. *Seeds* ovoid, smooth, .4 in. long.

Singapore, Wallich: Ulu Bubong in Perak.

Sir Joseph Hooker, who describes this species in the Flora of Brit. India from Wallich's Singapore specimens (which are accompanied by no field notes), is in doubt whether this is erect or scandent. Kunstler's field notes on the Perak specimens show it to be a creeper 20 to 30 feet long. It does not appear to be a common plant.

Species of which the flowers are unknown.

7. *C. CUCURBITINA*, King, n. sp. Scandent; branchlets finely striate, nearly glabrous; the thorns stipular, in pairs, hooked, very sharp, much shorter than the petiole. *Leaves* glabrous, shining, more or less broadly lanceolate or oblong-lanceolate, shortly acuminate, the base narrowed or rounded; main nerves 8 or 9 pairs anastomosing in bold intramarginal arches, the secondary nerves bold as is the midrib,

the reticulations distinct; length 5·5 to 7·5 in., breadth 1·75 to 2·25 in.; petiole under ·5 in., slender. *Flowers* unknown. *Fruit* cylindrical, tapering to each end, the apex shortly beaked; when ripe orange-coloured, 3 in. long, and 1·5 in. in diam.; gynophore nearly ·75 in., pedicel 1·25 in., slender. *Seeds* ovoid, smooth, ·4 in. long.

Ulu Bubong, Perak. King's Collector, Nos. 10027 and 10795.

A creeper, 20 to 30 feet long; allied to *C. Finlaysonian*, Wall. by its curious cucumber-like fruit, but with different leaves. Flowers have not as yet been collected.

8. *CAPPARIS KUNSTLERI*, King, n. sp. Scandent, the branches glabrescent; thorns stipular, in pairs, hardly ·1 in. long. *Leaves* membranous, oblong-lanceolate or oblanceolate, acute, the base narrowed, both surfaces glabrous, midrib and 7 pairs of sub-horizoutal curving nerves prominent below; length of blade 4·5 to 5·5 in., breadth 1·5 to 2·25 in., petiole ·5 in. *Fruit* axillary, solitary, globose, 1·5 to 2 in. in diam., deep yellow; gynophore about 2 in. long, stout; pedicel rather shorter.

Gunong Babu, in Perak, at an elevation of 800 feet, King's Collector, No. 8337.

A creeper, 40 to 60 feet long. Only fruiting specimens have been collected.

4. *ROYDSIA*, Roxb.

Large unarmed woody climbers, branches spotted white. *Leaves* simple. *Flowers* yellow, racemed or paniced. *Calyx* 6-partite, segments 2-seriate, tips a little imbricate. *Petals* 0. *Stamens* indefinite, inserted above the base of the short cylindrical gynophore. *Ovary* ovoid, 3-celled from the prolongation of the placentas; styles 3, subulate, or single and undivided; stigmas small, terminal; ovules many, 2-seriate in the angles of the cells. *Fruit* fleshy, with a woody 3-valved, 1-celled, endocarp, 1-seeded. *Seed* erect, cotyledons fleshy, unequal, longitudinally folded, the larger embracing the smaller.—Distrib. Species 3, tropical Asiatic.

1. *R. PARVIFLORA*, Griff. Notul. iv. 578; Ic. Pl. Asiat. t. 607, f. 1. A semi-scandent shrub, 4 to 8 feet high, glabrous, except the puberulous inflorescence and tomentose sepals. *Leaves* membranous, oblanceolate to obovate-elliptic, or sub-rotund, with an abrupt short blunt acumem; both surfaces shining, the midrib bold; primary nerves 5 or 6 pairs, prominent on the under surface, as are the intermediate nerves and reticulations; length 3·5 to 4 in., breadth 1·5 to 2·25 in.; petiole ·5 to 6 in., slightly thickened in the upper half. *Flowers* in long naked racemes arranged in a terminal leafless panicle much longer than the leaves, shortly pedicellate, ·2 in. in diam. *Sepals* 6, valvate, linear-oblong, sub-acute, densely tomentoso on both surfaces, reflexed. *Stamens*

20: filaments equal, not compressed: anthers innate. *Pistil* as long as the stamens; gynophore shorter than the glabrous, 2-celled, ovoid ovary. *Stigmas* 3, globular, minute. *Fruit* unknown. Hook fl. Fl. Br. Ind. i. 409.

Perak. King's Collector, No. 1611. Distrib. Burmah.

2. R. SCORTECHINI, King, n. sp. Scandent, glabrous except the minutely pubescent inflorescence and sepals. *Leaves* membranous, elliptic or obovate-elliptic, shortly and abruptly acuminate, narrowed to the base; upper surface shining; the lower pale, the midrib and 6 pairs of arching main nerves prominent: length of blade 5.5 to 6.5 in., breadth 3 in.; petiole 1.25 in., thickened in the upper half and bent in the middle. *Flowers* in terminal or axillary panicles or racemes, shortly pedicellate, .25 in. in diam. *Sepals* 6, slightly imbricate in bud, united at their bases, linear-oblong, sub-acute, minutely tomentose on both surfaces, reflexed. *Stamens* 30; the filaments unequal, slender, compressed, united by their bases; anthers innate. *Pistil* as long as the stamens, the gynophore shorter than the ovary, puberulous. *Ovary* glabrous. *Style* twice as long as the ovary, cylindrical; *stigmas* 3, sessile, ovate, small. *Ripe fruit* ovoid, smooth, yellow, 1.5 in. long and 1 in. in diam.; endocarp membranous.

Perak; Scortechini, King's Collector, Nos. 8464 and 4225: in open rocky places from 500 to 1200 feet.

In his field note on No. 8464, the collector describes this as "a splendid creeper 80 to 100 feet long"; in that on No. 4225, he says, "a tree 40 to 50 feet high." Fr. Scortechini's specimens have no notes. From the flexuose appearance of the dried twigs, I believe this is a creeper, and not a tree. This and the last belong to the section of *Roydsia* characterised by having an undivided style, for which Sir J. D. Hooker, (F. B. I. i. 409), proposes the sectional name of *Alytostylis*, but with an expression of doubt as to whether it should not be separated off as a genus. To this group belongs also the Philippine species *R. floribunda*, Planch. An undescribed species from Burmah in the Calcutta Herbarium (Gallatly No. 499) also falls into this section.

5. CRATEVA, Linn.

Trees. *Leaves* 3-foliolate. *Flowers* large, yellow or purplish, polygamous. *Sepals* 4, cohering below with the convex lobed disk. *Petals* 4, long-clawed, open in bud. *Stamens* indefinite, adnate to the base of the gynophoro. *Ovary* on a slender stalk, 1-celled; stigma sessile, depressed; ovules many, on 2 parietal placentas. *Berry* fleshy. *Seeds* imbedded in pulp.—Distrib. Species about 6, tropical and cosmopolitan.

1. C. MACROCARPA, Kurz in Journ. Bot. 1874, p. 195, t. 148, figs. 8 to

10. A small glabrous tree with pale smooth bark. *Leaflets* sessile, or nearly so, sub-coriaceous, obliquely elongate ob-lanceolate, the middle one narrower than the outer, rather bluntly acuminate, the base much narrowed; upper surface shining, lower pale dull with the midrib and nerves prominent; length 4 to 5 in., breadth 1.75 in. to 2.25. *Flowers* hermaphrodite, in terminal corymbose racemes, 2 to 3 in. in diam. *Petals* obovate, obtuse, unguiculate. *Stamens* 10 to 15, longer than the petals; anthers small, lanceolate, obtuse. *Ovary* ovoid, glabrous, the gynophore as long as the filaments; stigma sessile, discoid; placentas 2, parietal, multiovulate. *Ripe fruit* on a stout lenticellate carpophore 3 inches long, ovoid, smooth, purple spotted with grey, 2.5 in or more long by 2 in. in diam. *Seeds* embedded in pulp., compressed ovoid-reniform, smooth on the sides, shortly tuberculate along the edge, nearly .5 in. long by .35 in. broad.

Malacca. Maingay (No. 125 Kew Distrib.), Seorteehini No. 1771, King's Collector, No. 10461.

A species distinguished by its sessile leaflets and flat ovate-reniform tubercle-edged seeds. Kurz's figure of the seeds is bad; as he confessedly worked with imperfect material in describing this plant. I have seen no authentic specimens of *C. magna*, DC, or *C. membranifolia*, (Miq. Fl. Ind. Bat. Suppl. 387) but, judging from the descriptions, they probably refer to this plant; in which case the older name (*magna*) would stand.

2. *C. HYGROPHILA*, Kurz J. A. S. B. Part II, 1872 p. 292; Journ. Bot. 1874, 196 tab. 148, figs. 6, 7. A small glabrous tree, with pale striate lenticellate bark; the youngest branches dark-coloured. *Leaflets* membranous, very shortly petiolulate, obliquely lanceolate, acuminate at both base and apex, the lower surface glaucescent; nerves about 6 pairs, sub-horizontal; length 3 to 4.5 in., breadth 1 to 1.25 in., petiole .1 in. *Fruit* axillary, solitary or in fascicles of 2 or 3, cylindrical, the apex with a blunt beak when ripe, brownish, spotted with grey, 4 to 5 in. long and 1.5 in. or more in diam.; the carpophore and pedicel each about 2 in. long, dark-coloured and faintly lenticellate. *Seeds* embedded in pulp., .5 in. in diam., compressed but not flat, reniform, shortly muricate over the greater part of the surface.

Trang; King's Collector No. 1412. Distrib. Burmah.

Kurz founded this species on specimens from Burmah (in young fruit) which are now in the Calcutta Herbarium. The Malayan specimens (in mature fruit) agree with these. Kurz's drawing of the seed is misleading. For it was made from a young seed which had neither acquired its full size, nor its characteristic tubercles. Flowers of this species are as yet unknown; but the ripe fruit shows that they cannot

be in racemes as in the other species. The seeds approach in appearance those of *C. lophosperma*, Kurz, but are more tuberculate.

Besides the foregoing, there are in the Calcutta Herbarium specimens from Perak (King's Collector No. 818) of a *Crataeva* with leaves and flowers like *C. Narvala*, Ham. It is, however, described as having a thorny stem,—a character, so far as I am aware, not known in this genus. This is probably a new species, but, in the absence of fruit, I do not venture to describe it. The seeds appear to me to afford in this variable genus safer characters than any other part.

Order VIII. VIOLACEÆ.

Herbs or shrubs. *Leaves* alternate, entire or serrulate, stipulate. *Flowers* regular or irregular, 2-bracteolate. *Sepals* 5, persistent, equal or unequal, imbricate in bud. *Petals* 5, hypogynous, equal or unequal, imbricate or contorted in bud. *Stamens* 5, filaments short, broad; anthers free or connate, their cells often with apical processes; connective broad, produced beyond the cells. *Ovary* sessile, 1-celled; style simple; stigma capitate truncate or cupular, entire or lobed; ovules many, on 3 parietal placentas, anatropous. *Fruit* a 3-valved capsule. *Seeds* small, albumen fleshy; embryo straight, cotyledons flat.—Distrib. Genera 21, species 240; natives of temp. and trop. regions.

Tribe I. *Violeæ*. *Corolla* irregular; lower petal dissimilar. *Staminodes* 0. *Capsule* loculicidal.

Sepals produced at the base 1. *Viola*.

Tribe II. *Alsodeiceæ*. *Corolla* regular. *Staminodes* 0. *Fruit* a loculicidal capsule.

2. *Alsodeia*.

1. VIOLA, Linn.

Herbs, rarely shrubby below. *Flowers*, on 1-, rarely 2-flowered peduncles, often dimorphic, some large petalled which ripen few seeds, others small petalled or apetalous and very prolific. *Sepals* produced at the base. *Petals* erect or spreading; lower largest, spurred or saecate at the base. *Anthers* connate, connectives of two lower often spurred at the base. *Style* clavate or truncate, tip straight or oblique; stigma obtuse, lobed or cupular. *Capsule* 3-valved. *Seeds* ovoid or globose.—Distrib. Species about 100, all temp. regions.

V. SERPENS, Wall. in Roxb. Fl. Ind. Ed. Wall. ii. 449 (not of Cat.), and DC. Prodr. i. 296; hirsute or glabrous, stolons or stems usually long, leafy and flowering; *leaves* ovate-cordate, obtuse or acute, crenate-serrate; stipules toothed or fimbriate, spur saccate; *sepals* acute; capsules

globose, few-seeded, glabrous or pubescent. Stigma very oblique or quite lateral, often minute and perforated. Hook. fil. Fl. Br. Ind. i. 184: Miq. Fl. Ind. Bat. i. pt. ii. 113; Royle III. 74, t. 18, f. 1; W. & A. Prodr. 32. *V. Wightiana* var. *pubescens*, Thwaites Enum. 20. *V. pilosa*, Blume Bijl. 57; Miq. Fl. Ind. Bat. i. pt. ii. 113.

Perak; on Ulu Batang Padang; L. Wray, Junior. Distrib. mountain ranges of India, and of the Malayan Islands.

2. ALSODEIA, Thouars.

Trees or shrubs. *Leaves* alternate (rarely opposite), distichous; secondary nerves often numerous and parallel. *Stipules* rigid. *Flowers* small, axillary or terminal, solitary, fascicled, cymose or racemose, regular; peduncles with many bracts. *Sepals* 5, subequal, rigid. *Petals* 5, subequal, sessile. *Stamens* 5, inserted inside or upon an annular disk; with long or short often broad dorsal membranous connectival appendages, the cells of the anthers sometimes with apical linear processes. *Ovary* ovoid; style straight, stigma terminal; ovules few or many. *Capsule* 3-valved, few seeded. *Seeds* glabrous in the E. Ind. species.—Distrib. Species about 50, chiefly tropical American.

Seet. I. *Prosthesis*, Bl. (genus). Anthers with a subulate appendage from the apex of each cell, and a broad (usually dorsal) appendage from the connective.

1. *A. WALLICHIANA*, Hook. fil. and Th. Fl. Br. Ind. I, 187. A glabrous shrub. *Leaves* membranous, oblong-lanceolate to elliptic, shortly acuminate, entire or slightly serrulate, the base rounded or slightly narrowed; nerves 10 to 15 pairs, arching, prominent, their axils beardless; length of blade 9 to 12 in., breadth 2.5 to 5 in., petiole .5 to 1.5 in.; yellowish when dry especially on the under surface: stipules linear-lanceolate, glabrous, .75 in. long. *Racemes* shorter than the petioles, with many deciduous linear bracteoles. *Flowers* 4 to 8, pedicellate. *Perfect male flowers*; sepals acute, erect, lanceolate, equal to or longer than the petals. *Petals* oblong. *Filaments* short, attached to a 5-lobed fleshy disc. *Anthers* ovate with a small apical process on each lobe in front, and a single large orbicular hooded membranous appendage rising from the dorsum. *Pistils* rudimentary, or none. *Perfect female flower*; sepals spreading, ovate-acute, shorter than the petals. *Petals* erect, oblong obtuse, their apices recurved. *Filaments* longer than in the perfect male, the anthers without pollen. *Ovary* sessile, ovoid-conic, smooth; style cylindrical. *Fruit* subglobular, obtusely 3-angled, granular, .35 in. long, dehiscing into 3 blunt valves. *Seeds* mottled.

Penang; Wallich. Perak; King's Collector, Scorteehini.

The flowers in this species are practically unisexual and apparently

more frequently diceious than monoeious. In flowers where perfect stamens occur the ovary is either absent or rudimentary; and in plants with a well developed ovary the stamens, although in most cases perfectly formed, contain no pollen. These sexual differences are accompanied by slight differences in the leaves, those of the male plants being oblong-lanceolate, narrowed to the base and serrulate, while those with female flowers have entire elliptic leaves with rounded or slightly narrowed bases. Specimens of the former, collected in Penang, were issued by Wallich as No. 4024 of his Catalogue under the name *Pentaloba macrophylla*; while specimens of the female were issued as Nos. 7501 and 7513 (un-named, but with the notes by R. Brown). These notes are as follows: on No. 7501, "*Urticeae habitu; arborescens;*" and, on No. 7513, "*Indeterminata fruticosa, decumb.; foliis alternis integerrimis, coriaceis, impunctatis, glaberrimis, pedunculis axillaribus.*"

Wallich was wrong in referring this plant to the genus *Pentaloba* of Loureiro, for that author describes no appendages to its stamens. It belongs most certainly to the genus *Prosthesis* of Blume (Bijd. 866.)

2. *A. KUNSLERIANA*, King, n. sp. A glabrous shrub or small tree; the branchlets striate, sometimes lenticellate. *Leaves* subcoriaceous, oblong-lanceolate, acuminate or caudate-acuminate, sometimes minutely and obscurely serrulate, very much narrowed to the base; upper surface smooth and shining; lower dull, rough from the numerous short transverse secondary nerves and 14 to 16 pairs of prominent ascending main nerves; the midrib bold and subrugose; the reticulations minute and distinct; length of blade 6 to 10 in., breadth 2.25 to 3 in., petiole .25 to .5 in. *Stipules* lanceolate, .25 in. long. *Female flowers* in axillary, often crowded, fascicles or very short racemes of 3 to 8, bractoolate, the pedicels longer than the leaf-petioles. *Sepals* ovate, obtuse, imbricate, strongly nerved, the edges ciliate, shorter than the petals. *Petals* erect, the tips not reflexed, ovate-acute, rigid. *Stamens* with short flat filaments, each inserted into the apex of a lobe of the deeply 5-lobed disc. *Anthers* (without pollen) broad, adpressed to the ovary, each with 2 linear anterior and one large dorsally-attached halbert-shaped membranous appendage, the latter conniving into a cone round the upper part of the ovary. *Ovary* sessile, ovoid-conic; the stylo exserted, cylindric. *Capsules* ovoid, glabrous, shining, smooth, .5 in. long, dehiscing into three narrow compressed pointed valves; *seeds* one in each valve, ovoid, white, shining.

Singapore; Wallich, King's Collector: Perak; Seorteelini, King's collector; at low elevations. This species is more often practically monoeious than *A. Walliehiana*, to which it is closely allied. It differs, however, from that species in its much more acuminate rougher leaves, and also in its capsules and seeds.

3. *A. MAINGAYI*, Hook. fil. Fl. Br. Ind. i. 188. A small tree, glabrous except the inflorescence. *Leaves* membranous, nearly sessile, elliptic, acute or sub-acuminate, serrulate, the base rounded; main nerves 10 to 12 pairs, prominent below as are the transverse secondary nerves; length 5 to 6 in., breadth 2.5 to 2.75 in., petiole .15 in.; stipules lanceolate, .25 in. long. *Umbels* axillary, solitary, on peduncles .5 in. long, 8 to 16-flowered; the bracteoles, small, ovate. *Sepals* imbricate, ovate-rotund, or broadly ovate, obtuse, villous in the middle externally. *Petals* longer than the sepals, ovate, concave, villous in the middle externally and with a villous line along the midrib internally. *Stamens* with short, thick, densely tomentose filaments inserted on a thick, sub-glabrous, fleshy disc: connective tomentose behind. *Anthers* elongate-ovate, with 2 ovate setose anterior, and 1 broad sub-terminal ovate, dorsal appendages. *Ovary* sub-globular, style thick, both densely villous-tomentose. *Capsule* ovoid, sparsely strigose, the valves acute. *Seeds* with a white spongy caruncle.

Malacca, Griffith.

4. *A. MEMBRANEA*, King, n. sp. A tree or shrub, the young branches shortly pubescent or tomentose. *Leaves* thin when dry, obliquely obovate-elliptic, shortly and rather abruptly acuminate, serrate, the base narrowed, rather unequal-sided, both surfaces glabrous, except the midrib and 6 to 8 pairs of pubescent arching nerves, the reticulations wide; length 5 to 7 in., breadth 2.5 to 3 in.; petiole pubescent, .5 in. long; stipules subulate, pubescent, .2 in. long. *Racemes* axillary, condensed, sessile, shorter than the petioles, few-flowered. *Sepals* 5, unequal, the outer 2 rather smaller than the inner, all broadly ovate-obtuse, pubescent externally. *Petals* 5, obovate-oblong, obtuse, the margins ciliate with a few adpressed hairs on the back. *Stamens* 5, glabrous, the filaments very short, rising from a fleshy 5-lobed disc. *Anthers* broadly cordate or sub-reniform, with 2 small subulate processes on the apices of the cells and a large dorsal, cordate-acuminate, brown, membranous appendage as wide as the anther. *Ovary* sessile, ovoid, villose: stylo cylindrical, glabrous; stigma cup-shaped. *Capsule* ovoid, glabrous, the valves in dehiscence blunt: seeds sub-globular with a beaked caruncle.

Perak at low elevations. Kings' Collector, Scortechini.

A shrub or small tree. This comes near *A. dasycaula*, Miq. in externals; but has fewer-nerved, more glabrous leaves.

5. *A. HOOKERIANA*, King, n. sp. A small glabrous tree, the branchlets lenticellate. *Leaves* membranous, shining, shortly petiolate, elongate-oblancoelate or lanceolate, apex shortly and rather bluntly acuminate, entire or obscurely serrulate, gradually narrowed below the middle to the base; nerves 7 to 9 pairs, arching, slightly prominent; length 5

to 8 in., breadth 1.5 to 2 in., petiole .25 in.; stipules ovate, only .1 in. long. *Racemes* axillary, and on the older branches from the axils of fallen leaves, numerous, rather dense when young, afterwards sparse and open, from .75 to 1.5 in. long, bracteoles linear, pedicels as long as or longer than the flowers. *Sepals* ovate, equal, pubescent or glabrous. *Petals* lanceolate with linear blunt apex, longer than the sepals, glabrous, or pubescent along the midrib externally. *Stamens* glabrous, the filaments as long as the rather deep disc. *Anthers* broadly ovate, the base cordate, almost sub-reniform, the cells each with an apical point and with a broad membranous ovate acute dorsal appendage wider than the anther. *Ovary* sessile, pubescent; the style cylindrical, glabrous; the stigma cup-shaped, truncate. *Capsule* ovoid, compressed, obtusely angled, glabrous, reticulate, .5 in. long; the valves unequal, obtuse, compressed, sub-falcate: seeds sub-globose, pale, minutely mottled at the apex, the base with a papillate pitted caruncle.

Perak; at low elevations, Scortechini, Wray, King's Collector.

A tree from 20 to 30 feet in height; readily distinguished by its open, comparatively long, racemes. This closely resembles Blume's *Prosthesis Javanica*.

6. *A. WRAYI*, King, n. sp. A sub-glabrous shrub, the branchlets with pale brown puberulous bark, rarely lenticellate. *Leaves* membranous, glabrous, shining, shortly petiolate, oblanceolate, shortly acuminate, distinctly serrulate, narrowed to the base, length 3.5 to 4.5 rarely 6 to 7 in., breadth 1 to 2 in., petiole .1 to 2 in.; stipules linear, only .1 in. long. *Racemes* very short, crowded, axillary or extra axillary, .25 in. long; bracteoles broadly ovate, pubescent. *Sepals* lanceolate, tomentose externally. *Petals* oblong, obtuse, thickened and tomentose along the midrib. *Stamens* from the inside of a disc which is as deep as the filaments are long. *Anther* ovate-cordate, with a dorsal, ovate-acute, membranous appendage as broad as itself, and a terminal apical processes on each cell. *Ovary* sessile, densely villous as is the base of the cylindrical style: Stigma sub-capitate. *Capsule* minutely fulvous-velvety when young, glabrous when old, ovoid with obtuse angles, 1.25 in. or more long and .75 in. in diam.; the valves blunt, narrow. *Seeds* ovoid, brown, mottled, with sub-apical papillate pitted caruncle.

Perak; at low elevations; Scortechini, Wray, King's Collector.

A shrub 8 to 10 feet high. In respect of leaves very like *A. Hookeriana*, but smaller. The very short racemes, more hairy flowers and larger velvety capsules distinguish it, however, from that species.

7. *A. CINEREA*, King, n. sp. A glabrous shrub or small tree, the branchlets whitish, sparsely lenticellate. *Leaves* membranous, elliptic-ovate or lanceolate, sometimes oblanceolate, acuminate, narrowed at the base,

serrulate, pale when dry; nerves 8 to 10 pairs, slightly prominent below; length 4 to 6 in., breadth 1.5 to 2.5 in., petiole .2 to .4 in.; stipules scarious, pale, ovate-acute, striate, puberulous, .25 in. long. *Racemes* terminal, 4 to 6 in. long, bearing numerous 2 to 5 flowered cymules; bracts broadly ovate, scarious, concave, striate. *Sepals* ovate, ciliolate. *Petals* oblong, obtuse, the apex undulate, erose or toothed, edges ciliolate. *Stamens* from the edge of a deep fleshy disc; filaments very short, glabrous; anthers ovate, with a broadly ovate appendage from the middle of the back curving over the apex, the cells divergent at the apex and each with a subulate terminal appendage. *Ovary* sessile, glabrous, globose: Style cylindrical, with a few white adpressed hairs: stigma obliquely truncate, cup-shaped. *Capsules* ovoid, bluntly angled, glabrous, reticulate, .75 in. long; valves blunt: seeds globose with an ovoid beaked hilum, pale, smooth.

Perak, at low elevations. King's Collector.

Var. *hirsutiflora*, King. *Sepals* tomentose externally; filaments sparsely villous; disc small: the cymules larger and the bracteoles longer and narrower than in the typical form.

Perak; Changkat Jerin. L. Wray, junior.

The whole plant when dried has a characteristic grey colour, and from this circumstance I have given its specific name.

Sect. II. *Pentaloba*. Anthers with a broad, usually terminal, appendage from the connective; but none from the cells.

8. A. LANCEOLATA, Wall. (*Pentaloba*) Hook. fil. Fl. Br. Ind. i. 188. All parts, except the inflorescence quite, glabrous; bark of the young branches pale. *Leaves* shortly petiolate, elongate-lanceolate, bluntly acuminate, the base much narrowed; nerves 9 to 12 pairs, sub-erect; slightly curved, prominent especially below, secondary venation transverse; length 5 to 8 in., breadth 1.25 to 1.75 in., petiole .2 in. *Racemes* about .5 in. long, 4 to 6-flowered, minutely bracteolate. *Flowers* on short pubescent pedicels. *Sepals* ovate, obtuse, thick, pubescent, about half as long as the petals. *Petals* lanceolate, acuminate, sparsely villous towards the middle. *Filaments* as long as the anthers, slender, glabrous, rising from a small glabrous disc; anthers linear-lanceolate with a single lanceolate terminal appendage. *Ovary* rudimentary in many flowers, sub-globose and, like the cylindrical style, villous. *Fruit* sub-globose, minutely pubescent, .35 in. long, valves in deliscescence beaked. Oudem. in Ann. Mus. Lugd. Bat. iii. 68; *Vareca lanceolata*, Roxb. Fl. Ind. i. 648. *Pent. lanceolata*, Arn. in Jard. Mag. Zoo. Bot. ii. 544.

Ponang; Wallich, Stolickza, Curtis, King's Collector.

A shrub 6 to 8 feet high: apparently confined to Penang. This species is much more frequently truly hermaphrodite than some of

to others. The Sumatran species *A. dasypyxis*, Miq. comes very near this, but has longer racemes and more hairy fruit.

In *Alsodeia lanceolata*, Wall. there is a transition from *Pentaloba* to *Prosthesis*. Many of the specimens of *A. lanceolata* have the single terminal lanceolate appendage from the apex of the connective: others (Curtis's Penang specimen) have this appendage ovate and broader, while from the apex of each anther there is a rudimentary apical appendage, thus approaching *Prosthesis*.

9. *A. SCORTECHINII*, King, n. sp. A small glabrous tree, the branchlets usually pale brown. *Leaves* membranous, shortly petiolate, obliquely elliptic-lanceolate or oblanceolate, shortly and bluntly acuminate, irregularly serrulate; main nerves about 12 or 13 pairs, rather bold; secondary nerves transverse, slightly prominent below; length 7 to 9 in., breadth 2 to 3 in., petiole .2 in. *Racemes* sessile, about .5 in. long, several together, axillary or extra-axillary, about 3 to 5-flowered, with ovate bracteoles. *Flowers* pedicellate. *Sepals* puberulous, broadly ovate, much shorter than the petals. *Petals* 5, oblanceolate, with long bluntly acuminate exerted apices. *Stamens* glabrous, shorter than the petals; the filaments twice as long as the anthers, slender, rising from a deep, 5-lobed, slightly-notched disc; the anthers, short, ovate, with a single very small terminal appendage; ovary sessile, globose, glabrous, warted; style long, cylindrical, glabrous or puberulous. *Ripe capsule* ovoid, pointed, rather more than .5 in. long, glabrous, lenticellate; valves compressed, pointed. *Seeds* 2 in each valve, sub-rotund, whitish, carunculate.

Perak; King's Collector, Scortechini, Wray; at low elevations.

A large shrub or tree 20 to 25 feet high. Externally this much resembles *A. Maingayi*, but the flowers, and especially the anthers, differ much.

10. *A. CONDENSA*, King, n. sp. A glabrous tree; the older branchlets pale, lenticellate. *Leaves* membranous, shortly petiolate, inequilateral, elliptic to elliptic-oblong, sub-acute, serrulate, gradually narrowed below the middle to the acute unequal base; shining above, darker and dull beneath; midrib and 13 to 15 pairs of prominent main nerves pale and sub-erect beneath, secondary nerves transverse; length 8 to 14 in., breadth 3 to 4.5 in., petiole .25 to .35 in.; stipules subulate, .35 to .5 in. *Panicles* axillary, crowded, much branched, spreading, 1 to 2.5 in. long, (longer in fruit) puberulous or glabrescent; the bracteoles numerous, ovate, acute. *Sepals* unequal; the outer 2 or 3 larger, rotund; the inner 3 or 2 ovate, pubescent on the back. *Petals* ovate, a little longer than sepals, rhomboid, with pale edges, villous on the back externally and along the midrib internally. *Stamens* glabrous, the filaments rather short, from a fleshy disc: anthers cordate, with a single terminal white

ovate membranous appendage. *Ovary* sessile, globose, glabrous. *Style* cylindrical; *Stigma* cup-shaped. *Capsule* ovoid, pointed, glabrous, not lenticellate: valves compressed, pointed; seeds sub-globular, carunculate.

Perak, Scortechini, King's Collector; at low elevations.

A tree 30 to 40 feet high, approaching *A. Scortechini* in externals, but with different flowers.

11. *A. FLORIBUNDA*, King, n. sp. A shrub or tree, the young branches minutely fulvous-tomentose. *Leaves* membranous, shortly petiolate, oblong-lanceolate, ovate-lanceolate, sometimes elliptic, acute or acuminate, more or less obscurely serrulate; the base rounded, rarely acute; upper surface glabrous except the pubescent midrib and nerves; under surface minutely and softly tomentose, the midrib and 14 to 16 pairs of rather straight nerves and the transverse secondary nerves prominent; length 4.5 to 7 in., breadth 1.5 to 2.5 in., petiole .1 to .2 in.; stipules lanceolate, pubescent on the midrib, .25 in. long. *Cymes* axillary, on peduncles 1 to 1.5 in. long, much branched, dichotomous, spreading, many-flowered; bracteoles oblong, obtuse, pubescent. *Sepals* unequal, the outer 3 ovate-rotund, the inner 2 ovate, all obtuse and pubescent. *Petals* ovate-oblong, obtuse, longer than the sepals, the apices usually reflexed. *Stamens* from a deep, pilose, 10-lobed, disc: filaments expanded and pilose towards the apex, contracted and glabrous below; anthers elongate-ovate, with a single connectival ovate terminal appendage. *Ovary* sessile, villous, tomentose; style cylindrical, puberulous; stigma truncate, cup-shaped. *Capsule* ovoid, obtusely angled, adpressed-pubescent, .35 in. long; the valves blunt; seeds sub-globose, angled; caruncle long, narrow.

Perak, at low elevations; very common.

Distrib. Sumatra; Lampongs, Forbes, 1719; Padang, Beccari. P. S. 683.

Usually a tree, and sometimes attaining the height (*vide* Kunstler) of 70 feet. But also, according to the same collector, found as a shrub 6 to 8 feet high. This is allied to the Burmese species *A. mollis*, H. f. and Th., which however, besides having the anthers of a *Prosthesis*, has much smaller cymes, and broader bracteoles and sepals.

12. *A. ECHINOCARPA*, Korth. in Ned. Kruidk. Arch. II, 360. A small tree, the young branches fulvous or ferruginous-tomentose. *Leaves* membranous, shortly petiolate, obovate or ovate-elliptic, abruptly and shortly acuminate, boldly and unequally serrate, the base rounded or narrowed; upper surface glabrous except the pubescent midrib and nerves; the lower softly pubescent, the midrib, 11 to 15 pairs of nerves and transverse secondary nerves pale and prominent: length 6.5 to 9 in., breadth 2.25 to 3.25 in., petiole .1 to .2 in.; stipules .25 in. long ovate,

acute, pubescent margins the scarious. *Cymes* axillary and extra-axillary, sessile, condensed, 3 to 6-flowered; bracteoles lanceolate, keeled, pubescent. *Sepals* slightly unequal, ovate, obtuse, ribbed, tomentose externally, nearly as long as the petals. *Petals* oblong, obtuse, pubescent externally, glabrous internally. *Stamens* from a short glabrous disc; filaments longer than the anther, glabrous. *Anthers* narrowly ovate, the base cordate, with a single small terminal white appendage. *Ovary* sessile, densely villous, style sparsely villous; stigma truncate, cup-shaped. *Capsule* when ripe from 1 to 2 in. across, densely covered with brownish, tomentose, branched, felted fibres: valves compressed, blunt .75 in. long: seeds sub-globose, compressed, smooth, the caruncle ovate. Hook. fl. Fl. Br. Ind. i. 188; Miq. Fl. Ind. Bat. i. pt. 2, 116; Oudem. Ann. Mus. Lugd. Bat. iii. 79; Miq. l. e. iv. 216; Pl. Jungh. i. 122.

Singapore, Malacca, Perak, Penang, at low elevations. Distrib. Sumatra, Bangka.

Usually a small tree 20 to 30 feet high. Sometimes shrubby.

13. *A. CAPILLATA*, King, n. sp. A small shrub, the young branches rufous-tomentose. *Leaves* membranous, shortly petiolate, lanceolate, acuminate both at apex and base, serrulate; upper surface glabrous except the pubescent nerves and midrib; lower rufous-pubescent; the nerves about 11 pairs, bold, as are the transverse veins; length 6 to 7 in., breadth 1.5 to 1.75 in., petiole .25 in.; stipules lanceolate, pubescent externally. *Flowers* in small, sub-sessile, 3 to 5-flowered, axillary cymes. *Sepals* narrowly oblong, obtuse, tomentose externally. *Petals* linear-oblong, the apex sub-acute and reflexed, hairy along the midrib externally. *Stamens* alternating with the lobes of a deep, 5-lobed, glabrous disc; filaments slender, glabrous, longer than the anthers. *Anthers* small, ovate, each with an ovate acute small terminal appendage. *Ovary* sessile, globular, villous; style long, cylindrical, sub-villous; stigma truncate, cup-shaped. *Capsule* .5 in. long, rusty—pubescent externally and densely covered with unbranched, often hooked, soft, pubescent spines about 5 in. long and not felted. *Seeds* ovoid, smooth, pale, with dark semi-circumferential band, and an oblong carunculus.

Laroot in Perak, King's Collector No. 2462. A small bush 4 to 8 feet high. This comes near *A. echinocarpa* and *comosa*, but differs notably in its flowers and seeds.

Section III. Anther cells each with a terminal subulate appendage; no appendage from the connective.

14. *A. COMOSA*, King, n. sp. A shrub or small tree, the young branches densely ferruginous-tomentose. *Leaves* membranous, sub-sessile, oblong-oblancoolate, caudate-acuminate, serrulate, the base rounded; upper

surface glabrous; the lower pubescent, especially on the prominent midrib and 11 to 14 pairs of lateral nerves; length 5·5 to 7·5 in., breadth 1·5 to 2·5 in., petiole 2 in.; stipules subulate, .3 in. long. *Flowers* in dense axillary bracteolate glomeruli. *Sepals* ovate, obtuse, tomentose. *Petals* lanceolate, acuminate, pubescent externally, and (like the sepals) with an apical tuft of hairs, glabrous internally. *Stamens* from a short minutely toothed glabrous disc, the filaments shorter than the anthers: anthers narrowly ovate, each cell with a terminal apical seta, but without any appendage from the connective. *Ovary* elongate, sparsely villous; style pubescent; stigma truncate, cup-shaped. *Capsule* .5 in. long, flocculent-tomentose, densely covered with unbranched, subulate, soft, pubescent spines about .5 in. long, not felted. *Seeds* pale, ovoid, smooth, with sub-terminal papillate caruncle.

Perak, Wray No. 3299 and 1254; King's collector Nos. 406 and 554.

Species imperfectly known.

15. A. PACHYCARPA, King, n. sp. A small tree; the young branches pale, glabrous, sparsely lenticellate. *Leaves* membranous, oblong-lanceolate to elliptic-lanceolate, sub-acuminate, minutely and rather irregularly serrulate, the base slightly narrowed: both surfaces glabrous, the lower darker in colour; nerves 11 to 14 pairs, thin, but prominent below; length .5 to 7 in., breadth 2 to 3 in., petiole .4 in. *Sepals* rotund, pubescent, with thin glabrous edges. *Capsules* on short axillary branches, usually solitary, about 1·25 in. long; the valves boat-shaped, compressed, separating when ripe into two layers, the outer dark-coloured and pubescent, the inner pale, smooth, cartilaginous, and bearing the angular smooth carunculate seeds.

Perak, King's Collector No. 10235: Scortechini (without number).

A tree 20 to 25 feet high. Fresh flowers being unknown, the section of the genus to which this belongs cannot be determined. The capsules, however, show that it is a distinct species.

In addition to the foregoing, there are in the Calcutta Herbarium specimens of what appear to be five distinct species of this genus. The materials are, however, insufficient for accurate determination.

